

CTO

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SEVEN DOLLARS

TECHNOLOGY
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EDGE

USING
SYSTEMS
TO COURT
CUSTOMERS

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CIO

VOLUME 3, NUMBER 12



Using IT to close the sale 48
Cover photo by Mark Alcarez

COVER STORY

FURNISHING THE COMPETITIVE EDGE

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Steelcase Automation Services, an independent sales-support technology division of leading office-furniture maker Steelcase Inc., has devised an array of IT applications to help move furniture.

By Allan E. Alter

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Perhaps more remarkable than his 40-year career is the fact that Tony Vallario has spent all of it at one company—California-based wholesale distributor Bergen Brunswig Corp. He did it by taking care of business before technology and by learning how to change.

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Behind just about every customer service is some increasingly smart technology. And companies are profiting in expected—and sometimes unexpected—ways by making the commitment to customers.

By Meghan O'Leary



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LET'S MAKE A DEAL

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When a vendor proposes a strategic alliance, how will a CIO know whether to say, 'I do'? The answer depends on what the vendor has to offer and what the CIO hopes to achieve.

By Paul Konstadt

A singular career 24

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COLUMNS

Insights: If electronic mail is a technology pushed to fill needs it was never intended to meet, what capabilities should next-generation products possess?

By Brownell Chalstrom

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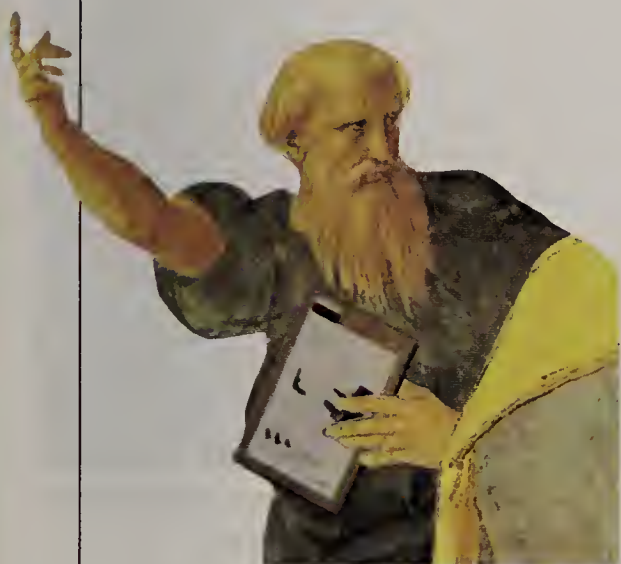
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"My ultimate PC system? It's got to be compatible with everything I've got already... so you can move data from one PC to another on a floppy."



"Networking PCs is a pain. I'd like them designed to do networking without lots of configuration work... in networks I've already installed."



"The perfect PC would be an ideal client to all my information systems... putting data in the hands of decision makers in a form they can use."



"I'm tired of vendors changing operating systems. I want to drop a new box on my executives' desks and know their software will run."

Hidden camera reveals the se

Not long ago, we invited hundreds of IS managers from around the country to talk about their wildest desires in a personal computer system.

They talked. We listened. We videotaped. And when we got those tapes back to Silicon Valley, popped them in the VCR and started watching, it confirmed what we knew all along.

They wanted a personal computer system that was compatible enough with their existing PCs to trade

files on floppy disks. Like Macintosh.[®]

They wanted a system with the flexibility to run almost any kind of software: MS-DOS, Macintosh and UNIX.[®] Like Macintosh.

They wanted a graphical user interface with no compromise in performance. Like Macintosh.

And they wanted all their software to have a single way of working, so training and support costs could be dramatically lower. Like Macintosh.



"A graphical interface is clearly important... users love 'em. But the architecture has to be designed to handle it without compromising performance."



"I'd like to see more discipline from software developers. Commands should be consistent for every application... it would eliminate retraining costs."



"Off-the-shelf software isn't enough. I need serious tools my existing programming staff can use to develop custom apps quickly."



"Macintosh? No kidding?"

Secret desire of 200 IS managers.

They wanted a system with sophisticated networking capabilities built in, that could access almost any host or file server via any network. Like Macintosh.

They wanted all these things in a wide range of personal computers. That would all work the same way and run the same software. Like Macintosh.

And they wanted development tools that would let their existing programming staff build applications quickly and easily. Like Macintosh.

In short, they wanted everything that Macintosh offers. But they just didn't realize they could have it today. For details, see an authorized Apple reseller.

Now that we know all of your secrets, it's time you found out about all of ours.



The power to be your best.™

If you can believe what you read in newspapers and magazines, it's official—1990 is the year of the customer. Catering to the customer has been talked about so much that people are actually starting to expect to be pampered by their banks, department stores and even their local emporia.

Sure, we all have run-ins from time to time with the great unwashed in customer service, but hopefully those experiences will be few and far between in the future.



A significant component of service excellence is being able to quickly provide accurate, up-to-date information to customers. Two of our stories this month convey the critical role information systems play in creating happy and loyal customers. Senior writer Meghan O'Leary, in her article entitled "IT at Your Service" (beginning on Page 38), found responsiveness to be the critical component of good customer service. And responsiveness is one ingredient IT is best suited to provide,

according to executives interviewed. Interestingly, the article points out that good customer service reflects a high level of efficiency among internal operating groups of the company, spurred by a good internal communications infrastructure. And in a growing number of cases, IT provides service by leaving customers alone, letting them avoid mere humanoids who may not be at work in the wee hours of the morning when you may want to check an account balance.

Illustrating the driving force of customer service is Steelcase Inc., whose customers are independent office furniture dealers, architects and designers. Senior Editor Allan E. Alter found that Steelcase's Automated Services group, whose mission is to provide customer service, has built a variety of information systems that help customers select and configure a mind-boggling array of office furniture options. In our article entitled "Furnishing the Competitive Edge," beginning on Page 48, Steelcase executives report that the company's IT-based customer services were responsible for attracting \$280 million worth of business out of a total \$1.6 billion in U.S. sales last year.

The ability to harness the information needed to drive superb customer service efforts contributes to the overall quality quotient of a company. And in a business environment that is increasingly dictated by speed, systems dedicated to customer service can foster unprecedented flexibility in customizing a company's products and delivery capabilities.

Marcia Blumenthal



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September 1990

"Partnerships or alliances with vendors, middle persons and customers; instant decision making, and involvement of everyone with everyone's business will be the norm. The idea of organizations as islands to themselves is a notion only associated with losers."

Thomas J. Peters, Author
A Passion for Excellence

Dear Executive:

This month CIO magazine celebrates its third anniversary. It was just three years ago that we started with a very simple premise, namely a "partnership." Our partnership includes four parties; you, the world's leading information executives; the key departmental executives you support; the vendors in the information industry; and, last but not least, CIO magazine.

As partners, our goal is to expand the promise of information technology as a vital component in the achievement of our business goals. With 1990 worldwide expenditures estimated at \$233 billion, the information industry will continue to have a significant impact on the global business community.

Organizations that want to prosper, or simply survive, in the 90's can no longer afford to downplay the importance of the information-management function -- or the growing number of executives who plan and oversee their companies' information resources.

As we begin our fourth year, I'd like to thank you for your past support. As always, I would appreciate hearing your comments, suggestions, and ideas for future issues. After all, that's what partners are for.

Sincerely,

Joseph L. Levy
President and Publisher

P.S. To help celebrate CIO's third anniversary, we are offering a limited number of complimentary subscriptions to qualified executives. Please complete the form that appears after page 74 and return it to me before September 30, 1990.

Coming in CIO

Global Networks

Competing in the global marketplace is still a dream for many companies. *CIO* explores what it takes to make that dream a reality.

EDI Update

While no one questions the potential benefits of electronically exchanging data, many users have been press-ganged into EDI by a few powerful customers. Observers say that few of these businesses are using the technology to run their own shops more efficiently.

In the Chips

C*IO* takes a look at the latest in semiconductor technology and the faster, more-powerful personal computing systems it makes possible.

Competitive Intelligence

Companies are increasingly using information about competitors in order to stay a jump ahead. But raw data alone isn't worth the disk it's written on; to be of value, the information must be effectively analyzed and distributed to the appropriate executives.

Most of today's E-mail users believe that the security the systems offer is inadequate, so they're reluctant to send vital or sensitive corporate information that way.

People have found ways to make E-mail do all of these things, but they've usually had to force-fit the application. E-mail is a classic example of "technology push," where a solution that works extremely well for some applications has been adapted to others without being quite the best tool for the job.

Over the last decade we've seen the spread of networked PCs and workstations, the widespread deployment of mature PC operating systems like OS/2, more powerful servers, and the introduction of mainframe-class applications for PCs and workstations.

Over the same period, organizational realities have changed just as dramatically. Most companies have become flatter, with fewer levels of management.

And today, more employees than ever before are working together in groups. Today's workgroups are not necessarily visible on the organizational chart; they are often loosely defined. For instance, people who constitute a workgroup may or may not work together full-time. They are often associated only at a distance and only for the duration of a particular project, such as the development of a new product. They may not work in the same building, or even the same time zone. They often don't need to be in contact continuously; it may be enough that they can get in touch with one other intermittently.

One characteristic of nearly all workgroups, however, is that the information they need to share is diverse, and whatever communications software is designed for them ought to accommodate that diversity.

Recently a number of vendors have introduced products designed specifically for the needs of changing organizations—particularly of groups interconnected in local- and wide-area networks. Lotus Development Corp.'s Lotus Notes, IBM Corp.'s OfficeVision, AT&T's Rhapsody, and Hewlett-Packard Co.'s NewWave are

attempts to address new styles of workplace communication and collaboration.

The ideal, full-function business communications system should function like an "information marketplace," in which information has an existence independent of the person who created it or the time in which it was created and can easily be made available to the people who need it whenever they need it. It ought to look less like a messaging system and

*The users of business
communications
systems are
capturing—and
sharing—ideas and
information that might
otherwise be lost.*

more like a database system with integrated communications capabilities.

This information marketplace should offer no barriers to participation in a workgroup or to getting things done. It ought to let information flow easily in all directions—up, down and sideways. And it should store information in such a way that it becomes the organization's collective memory, so that when people leave the group their knowledge is not lost, and when new people join they can come up to speed quickly.

It should offer comprehensive document processing. It should be able to handle rich text, numerical information and graphics with equal ease. In fact, this information marketplace ought to be flexible enough to handle fax, voice, animation and even the ultimate object, an entire software program.

It should support the same kinds of forms-entry capabilities found in relational-database products, with field typing and checking and other forms of error control. It ought to interface with public electronic data interchange (EDI) services.

The ideal system should be modular, so it can change and grow as the organization does. It ought to be standards-based, so users can mix and match different vendors' products, and so it connects easily with whatever hardware and software are already in place. It ought to be secure enough that it can be used for mission-critical applications like customer support.

The information marketplace should be able to handle both internally and externally generated information. It should make it easy to import, export and transfer information. And it should offer full-text search and editing capabilities.

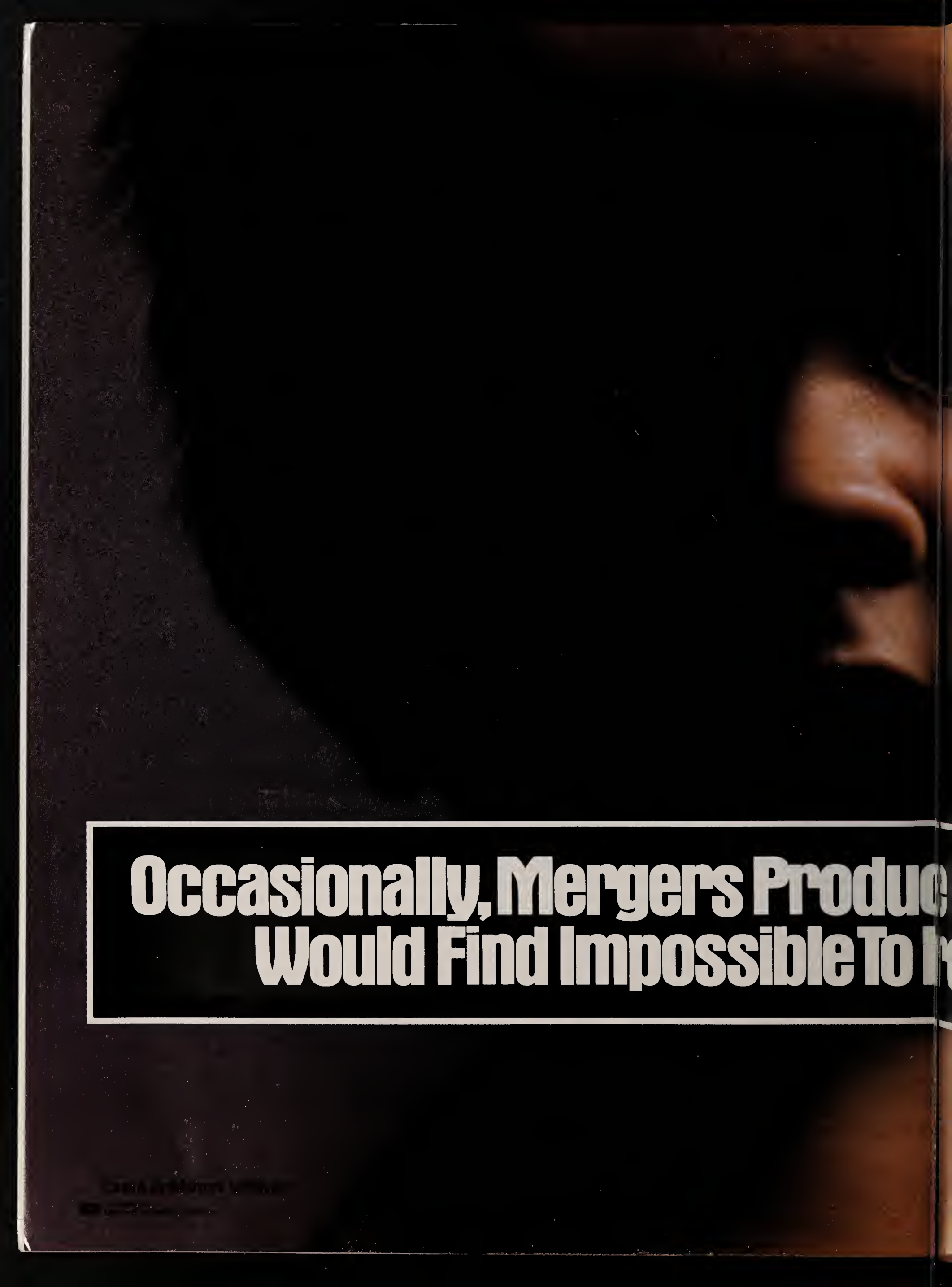
Ten years ago, none of this could have been imagined on a PC platform—PCs were toys. Today, people with PCs are doing these things with Lotus Notes. They're tracking sales in the field and making sales information available to upper management nearly as soon as it's entered. They're even serving customers better, because they can get their hands on what customers need to know.

Perhaps most important of all, the users of these business communications systems are capturing—and sharing—ideas and information that might otherwise be lost.

Clearly, the business communications systems of the future will offer even more bells and whistles—like high-definition, interactive displays or perhaps image scanners, video cameras and laser printers attached directly to workstations. Mailboxes will probably be accessible from anywhere in the world.

But as with today's E-mail, the point won't be the technology. It will be the increased ease, richness and immediacy of communication the technology makes possible. That's what has made E-mail so popular and useful. Just as early radio technology led eventually to the development of television, E-mail has paved the way—and created the demand—for the more comprehensive business communications systems of the future. □□

Brownell Chalstrom is director of networking at Lotus Development Corp. and is associated with the Lotus Notes product.



**Occasionally, Mergers Produce
Would Find Impossible To**



It's not surprising that two can sometimes accomplish things that one never could. What is surprising, however, is just how beneficial the merger of McCormack & Dodge and Management Science America (MSA) promises to be.

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TRENDLINES



MANAGEMENT

A LITTLE TRAVELING MUSIC, PLEASE . . .

It's one thing to set a corporate travel policy, but it's not always easy to measure compliance. With organizations spending big bucks on business travel, it would amount to managerial negligence not to have a coherent program for monitoring costs and checking compliance with internal travel policies.

A number of products and services have sprung up to help corporate travel departments perform this oversight (often with the help of IS). Not surprisingly, among the vendors are some of the major travel-services and credit-card players (Citicorp, American Airlines Inc., American Express Co.).

Leveraging its position as a leading international travel agency, IVI Travel of Northbrook, Ill., has teamed up with First Bank System, a Midwest regional bank, and Visa USA to offer companies a travel-management service that requires no hardware or systems-development investment on the customers' part. IVI manages the databases and generates reports that enable companies to compare planned versus actual expenses. Because the system, called KNOWLEDGE, is predicated on employees' use of the First Bank Visa card for travel arranged through IVI,

information on travel spending is easily culled from the First Bank Visa cardholder database.

Based on their needs, client companies can request reports on individual, group, divisional or corporatewide travel activity. They can also track spending with particular ven-

dors. For example, a summary of hotel spending provides an overview of a company's entire relationship with specific hotel chains. According to Tom Ishikawa, director for payment products at IVI, armed with this sort of information, "companies are in a stronger position when it comes to negotiating better corporate room rates or travel amenities." The system offers summary analysis for airlines and car-rental agencies as well.

The compliance-monitoring feature of the service "identifies transactions not booked through IVI and variances between reserved and charged transactions," said Ishikawa.

KNOWLEDGE is priced in two components: a startup fee, beginning at \$500 for the smallest accounts, and a monthly flat-rate processing charge that is based on anticipated volume.

IVI claims more than 1,000 corporate clients whose total air travel accounts for more

than \$600 million annually. In forging its relationship with First Bank System and Visa, IVI counted on the wide appeal (220 million cardholders) and acceptability (7.5 million worldwide merchant locations) of the Visa card. ■

GLOBAL TRADING

NOT READY TO PLUG AND PLAY

According to a recent report by the Office of Technology Assessment (OTA), a non-partisan Congressional research agency, U.S. securities markets are not yet ready to participate effectively in the coming globalization of securities trading, which will result in an IT-intensive, 24-hour-a-day worldwide stock market.

The report envisions a time when the availability of detailed information on any enterprise anywhere in the world will eradicate traders' inhibitions about involving themselves in distant markets. Entitled "Trading Around the Clock," the report asserts that the technology to enable global trading—public and private telecom networks—is basically in place. However, "significant obstacles remain, because international standards and effective international regulatory protections" have yet to be developed.

Once the regulatory mechanisms and trading standards are hammered out, there is no assurance of U.S. leadership in global securities, the report contends. One reason for the OTA evaluation is that domestic securities exchanges have so far been slow to fully embrace electronic technologies—probably for fear that automation will ultimately do away with the traditional

ON THE RECORD

Two top automotive executives were provocative in print last month.

Yukiasu Togo, president and CEO of Toyota Motor Sales USA, was quoted in an August *Business Month* feature on Japanese managers in America. Togo distinguished his management style from that of his U.S. peers: "The difference between America's Big Three and Toyota is that their top executives never visit the front line. My office is where my shoes are."

Retiring General Motors Chairman Roger Smith, one of those remote souls to whom Togo referred, was quoted in *The Wall Street Journal*. In response to an interviewer's question about an apparent shift at GM away from emphasizing technology to emphasizing people, Smith explained:

"People said, 'You guys made a horrible mistake; you overshot on technology.' That's not a mistake. That's a deliberate thing. If you keep pulling string out of the box and stop, you never know how much string is in the box, right? We've taken technology out of some places that we put it in. But I would tell you that if we hadn't put it in, we'd never know we should take it out."

Toyota's Togo, on the other hand, probably wears out a lot of shoe leather trying to calculate in advance exactly how much string to pull out of the box. ■

TRENDLINES

"open-outcry" method of trading. Some exchanges (such as the Chicago Mercantile Exchange and Chicago Board of Trade) are developing automated 24-hour trading systems. The New York Stock Exchange, in an effort to recoup the 6 million to 20 million shares a day it estimates it loses to foreign exchanges, has announced plans for 24-hour trading by the year 2000. (The OTA calls the NYSE plan "conservative.")

The OTA concludes that efforts to accelerate U.S. readiness to participate in global trading should not be left to the private sector alone. The report recommends that Congress play a critical role in encouraging, through oversight, the U.S. securities exchanges to prepare for globalization; and that it help in developing the international regulatory umbrella.

The House Subcommittee on Commerce, Consumer and Monetary Affairs will hold hearings this fall on domestic securities trading and information technology. ■

NEW VENTURES

Index Technology Corp. in Cambridge, Mass., and New York-based Deloitte & Touche have formed a strategic alliance whereby the two firms will jointly develop computer-aided software-engineering products incorporating the methodologies of both companies. Index Technology will market these products worldwide. The first of the products, 4Front, is based on Deloitte & Touche's methodology and incorporates Index Technology's PC Prism and Excelerator systems. Both companies said they would develop future CASE products that support other development approaches. ■

NEW FONE FUNCTIONS

In response to the advent of such innovative telephone services as call-waiting and caller ID, *Sourcebook*, a Whittle Communications publication sponsored by Xerox Corp., recently ran a column by freelance writer Dan Gutman proposing a few new features that would quickly become indispensable.

"SELECTIVE CALL DISCOURAGING: Program the numbers of people you really don't want to speak with. When they dial your number, your phone transmits a mild electric shock through their receivers.

"GOSSIP NOTIFICATION: Company rumors are automatically broadcast to selected voice mailboxes. Time

once wasted circulating gossip now translates into increased productivity.

"SUBLIMINA-CALL: Periodically during a conversation, the phone plays subliminal messages, such as 'Say yes,' and 'Increase my department's budget.' "

To Gutman's list we would add the following, which takes caller ID a step further—**CALLER EVALUATION:** A sophisticated expert system, simulating a Doberman pinscher-style receptionist, predicts the substantive content of incoming calls and accepts only the ones you want or need to receive. The rest are forwarded to **SELECTIVE CALL DISCOURAGING.**

TRANSACTIONS

BIDDING FOR BUDS WITH BYTES

While flowers are the language of love in many countries, in Holland they are the language of business—big business. There, just 10 miles outside Amsterdam at the United Flower Auctions of Aalsmeer (UFAA), IBM System/88 computers and an IBM mainframe support the daily auctioning of 14 million flowers and 1.5 million potted plants to exporters.

A network of 13 huge, electronically controlled clocks in UFAA's five auction halls allows exporters to view consignment and quality information and make bids on flowers being displayed on trolleys at the front of each hall. At the beginning of each auction, the clock pointers start at 100 Dutch cents (12 o'clock), moving counterclockwise toward one cent as the auction proceeds. Once the pointer begins dropping, the first bidder to press a button on his or her desk stops it. An electronic system automatically identifies the bidder by number, and the auctioneer enters order

information into a computer. The transaction is completed in seconds, and the clock is reset to allow exporters to bid on the remaining flowers.

Orders from the auction halls are sent online to a central database that reconciles pricing information and invoices and manages logistical concerns such as the flow of goods, quality ratings and distribution slips. Using this system, the UFAA handles up to 150,000 transactions per day, keeping its perishable merchandise moving from the loading docks to the auctions and back out to a fleet of refrigerated trucks bound for local distributors and cargo

planes at nearby Schipol Airport.

A cooperative society of 4,800 growers and 300 exporters (who buy from the growers), the UFAA accounts for over 30 percent—\$1 billion—of the world flower exporting market, according to Arie Van Poelgeest, manager of automation at UFAA. The UFAA's computer system is extraordinarily efficient. "With help from the computer system," Van Poelgeest said, "we're able to auction a bouquet of roses here in the morning [and] it can be available that same evening for a wedding reception in Paris, Rome or New York." ■



TRENDLINES

REORGANIZING

A WEIGHT-REDUCTION TOOL FOR MANAGERS

As 1990s economic reality creeps up on the boom industries of the '80s, many managers face the disagreeable task of reducing costs and corporate bulk through restructuring. For those who balk at wielding the axe, however, The Organization Analyst might suggest some humane alternatives.

Created by Cheyenne Software Inc., a LAN product developer based in Roslyn, N.Y., The Organization Analyst helps a company to gauge how much it spends to perform each business function, and identify areas to streamline. The user company gathers information by having managers fill out "biographies"

that detail employee names and salaries as well as how much time each employee spends on specific activities. The managers' salaries and activities are also included in the data.

The information is plugged into The Organization Analyst, which generates reports identifying the company's primary activities, who performs them, and how much money those activities cost the company per month or per year. Employers can use the reports to refocus company activities and eliminate redundant efforts.

Cheyenne Director of Sales Andrew H. Boyland, who helped develop the product in a 1987 downsizing effort at New York-based Chemical Bank, stressed that the package is geared toward helping companies use their employees more effectively through restructuring, rather than helping them plan for layoffs. He admitted, however, that the application of this philosophy depends on immediate corporate needs. "If faced with market-share reduction or bankruptcy, [the employer's] approach is usually aggressive."

But Boyland pointed out that at least one client saved enough money by shuffling its 12,000 employees after eliminating 700 jobs to avoid layoffs altogether.

Boyland said his clients' savings from restructuring depend largely on the size of the organization and have ranged from a few thousand dollars to, in the case of one major bank, \$8 million. Regardless of a company's size, he added, the savings are always significant, and the timing of the product "couldn't have been better. The bottom line is the bottom line."

The Organization Analyst is priced at \$15,000 for PC-based software, training and toll-free technical support. Maintenance and upgrades are included for an additional \$1,500 per year. ■

CAREER MOVES

MARK WILBERTS has been named vice president of IS for Land O'Lakes Inc., the dairy-products company based in Arden Hills, Minn. Wilberts, who has been with Land O'Lakes for six years, most recently directed the company's telecommunications network.

DONALD D. FENSTERMACHER, who since 1984 has directed the IS function at Harrow Industries Inc. of Grand Rapids, Mich., was promoted in July to the title of vice president of management information services, in which capacity he becomes an officer of the company.

Harrow Industries is a group of eight operating companies in the United States and Canada that manufacture finished goods for the hardware and building-products markets.

STEVE MILSTON has been named CIO for Health Risk Management Inc., a Minneapolis-based supplier of full-service managed health-care services. Previously, Milston was director of information services for HRM.

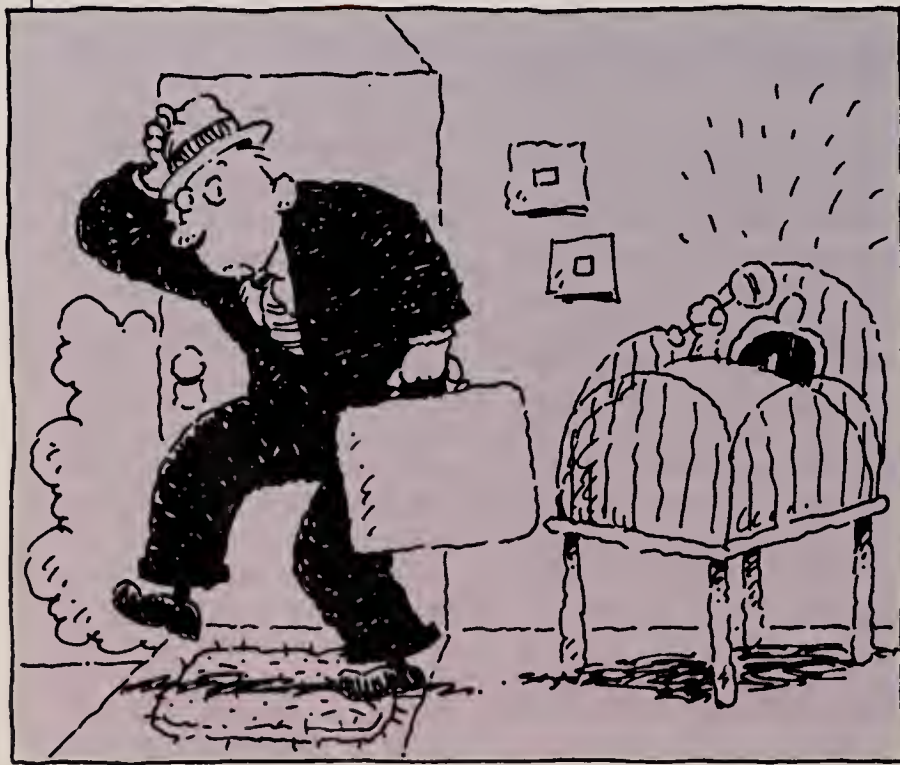
In his new role Milston will both direct the company's IS research and development activities and continue to oversee the information services function.

ALBERT DEL GARDIO has joined Gibson Greetings Inc., of Cincinnati, as vice president of information resource management. Prior to coming to Gibson, Del Gardio was corporate director of information services at Caressa Inc., of Dania, Fla. ■

DECLINING THE DADDY TRACK

More companies are holding open the door for new dads to take paternity leave, but an overwhelming majority are declining the offer, according to a recent survey conducted by Robert Half International, a worldwide employee-recruitment firm headquartered in San Francisco.

The survey of executives at 200 of the nation's 1,000 largest companies revealed that 31 percent of these employers now offer paternity-leave programs, but only 1.3 percent of eligible employees elect to participate. Robert Half Chairman Max Messmer said that while "more companies are recognizing the need to give both parents the flexibility to attend to family duties, . . . there is an unspoken concern that taking paternity leave is not going to move one's career forward. And most working fathers are afraid to take that chance." ■



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TRENDLINES

RESEARCH & DEVELOPMENT

BUILDING THE BETTER DIAMOND

We've all heard that diamonds are a girl's best friend, but they may also prove to be a very good buddy to electrical engineers.

A group of scientists in Schenectady, N.Y., has created a new and improved synthetic diamond that could be used to design faster and more powerful computers.

Developed by the General Electric Co., the new "isotopically pure" diamond conducts heat 50 percent better than a natural diamond, which was the previous conductivity

champ. In addition, the new diamond is highly "laser transparent"—it can withstand 10 times as much laser radiation as a natural diamond without sustaining damage.

Such remarkable thermal and transparency properties are a complete surprise to the R&D team that worked on the project, according to Rick D'Angelo, a market development engineer in GE's diamond marketing group in

Worthington, Ohio. In fact, the scientists don't quite understand why their diamond conducts heat so well. Other properties are currently being measured, perhaps with a few more surprises in store, but D'Angelo is convinced that GE has stumbled onto a gold

mine. "The range of commercial applications will be limitless," he predicted.

Natural and synthetic diamonds are already used in a wide variety of industrial applications, but this new variety could lend itself particularly well to electronics. Using it as a "heat sink" in microchips is one foreseeable application that could lead to faster, more powerful computers, D'Angelo said. (A heat sink is any element that draws heat away from an active component, thus helping it operate at a cooler temperature.) The new diamond's conductivity could enable microchip components to be jammed closer together without the danger of overheating. And its increased laser transparency could do for semiconductors what its conductivity promises to do for microchips. By "pushing the lasers [that make the images on semiconductors] to shorter waves," said D'Angelo, "more images can be put in a smaller space."

Although GE is collaborating with some companies on applications development, the primary marketing strategy is to sell the diamonds to companies that will develop their own applications. D'Angelo expects that the diamond will be commercially available some time next year.

Even if this diamond proves to be the greatest thing since the transistor, let's hope that electrical engineers don't start singing about it. ■



CHEER UP

For some people, a bad day can gradually turn into a bad month. Or two. Many of these sufferers owe their malaise more to depression than to bad luck. For those without access to a therapist, a Malibu, Calif., company, the Malibu Artifactual Intelligence Works (MAIW), recently introduced an interactive, AI-based PC software package that helps depressed individuals

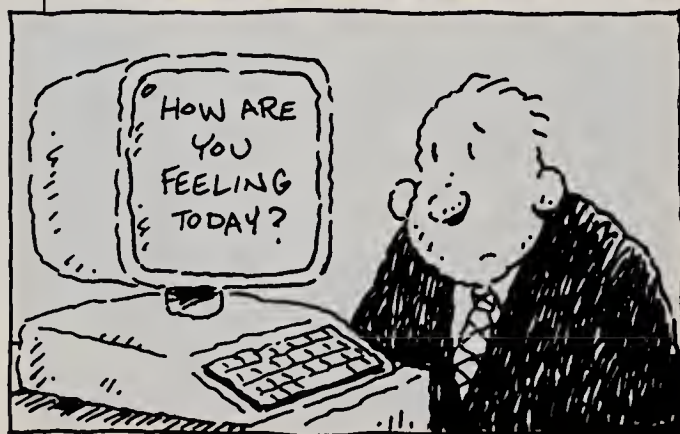
designer and a psychiatrist and pioneer in artificial intelligence who has taught at Stanford University and UCLA, the product is intended for PC owners who, for whatever reasons, decline to seek outside help for their depression.

"My idea was that since something like 90 percent of people with mental-health problems never see a professional, there had to be some way to get cognitive therapy out to these individuals," Colby said.

The software is divided into seven "lessons" that both teach the user about varieties of depression and prompt interaction through a dialogue mode. At the end of the final lesson, the program administers a test whose results trigger a recommendation for future action—such as seeking professional help.

Colby sees his two professional disciplines as a natural mix. "I think computers can contribute quite a lot to psychiatry, both therapeutically and diagnostically," he said. "That's the reason I became interested in artificial intelligence."

Overcoming Depression runs on IBM-compatible PCs (DOS 2.1 or higher, 640K RAM and at least 2MB of hard-disk space). It sells for \$199. MAIW can be reached at 213 456-7787. ■



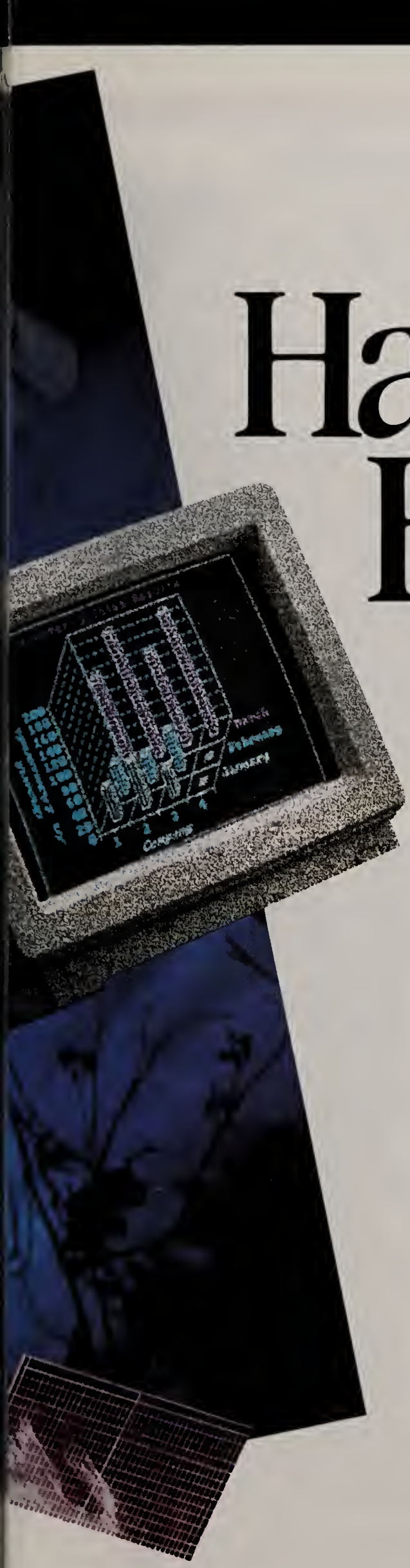
begin to define their illness for themselves and discover a way out of it.

Christened with the truly straightforward moniker of "Overcoming Depression," the program uses a natural-language interface to lead victims of depression through a therapeutic dialogue aimed at "self-reprogramming."

According to Dr. Kenneth M. Colby, the product's

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Cloak and Data

As political events dramatically alter world markets, CIOs will be called upon to develop business intelligence systems to stay ahead of the competition

BY HERBERT E. MEYER & MICHAEL PINCUS

There has been a lot of discussion recently about how the CIA and the KGB may be shifting gears to focus on economic rather than military surveillance, given the rapidly changing geopolitical landscape. The changing climate will also affect the way U.S. companies address their information- and intelligence-gathering needs. In fact, many U.S. firms are already developing their own business intelligence (BI) systems to monitor developments around the world and analyze how these changes will affect their firms' interests.

Today's business leaders need organized, correlated data to keep them up-to-date with the changing politics, economics, technology that will influence their operations in existent and prospective markets. During the next decade, the company that can gather, analyze and properly distribute externally generated information will have a tremendous strategic advantage.

"Business intelligence" is emerging as the ultimate competitive tool to help companies exploit such information to achieve their strategic objectives. This new emphasis on information generated from external sources is placing new demands on the IS organization.

A business intelligence system is analogous to an airplane's radar system: It enables the pilot—the chief executive—to see what is going on in the external environment through which he is moving. Just as a radar system scans the environment and projects patterns of weather and aircraft activity so that the pilot can respond effectively to dangers and opportunities, so too does a business intelligence system project patterns



of activity occurring throughout the commercial environment.

With the correlated and analyzed information that a business intelligence system provides, a chief executive and his senior staff can chart the safest, most direct course to their strategic objectives and see dangers in plenty of time to take evasive action. The chief executive can also see opportunities long before they are visible to those without such an external system.

As the BI system is analogous to the radar for the pilot, the management information system is analogous to the instrument panel. MIS enables the chief executive to learn whatever he needs to know about the internal state of his enterprise. The combination of these systems enables the CEO to ensure that he has the appropriate external and internal information available in the shortest possible time.

Competitive intelligence is one component of a BI system. Typically, BI systems have at least six components, which include information about competitors, customers, suppliers, current markets, potential

markets and political, economic, scientific and technological trends relevant to the company.

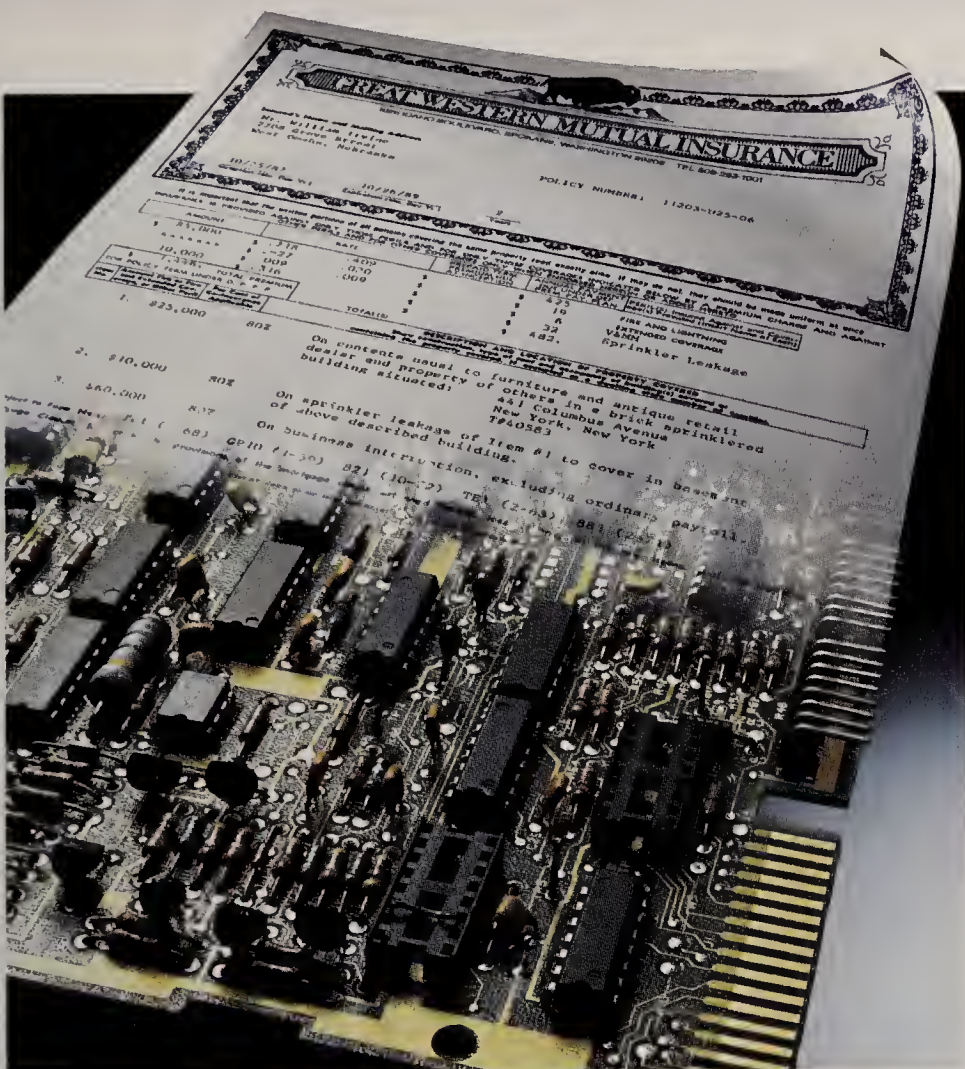
BI systems also offer more than a straightforward reporting of facts. In a BI system, information is not only selected and collected, but it's also correlated, analyzed and distributed to the proper executives in a timely fashion to meet the unique policy-making needs of the enterprise.

While some U.S. companies utilize pieces of BI systems—such as implementing text-retrieval software to monitor media coverage of certain topics, or hiring competitive intelligence consultants—many forward-thinking U.S. firms are currently developing comprehensive in-house BI systems in order to best exploit all available information.

Meanwhile, many Japanese and European firms have set up analysis operations and think-tanks that focus solely upon business information and intelligence gathering. Many are already developing BI systems to help them prepare for the next century.

The heightened emphasis on organizing external information means that CIOs will need to be even more involved in helping to develop business intelligence systems. By combining their information technology management expertise with the ability to recognize strategic, exploitable external information, CIOs will play an important role in coordinating the instrument panel and the radar screen as their firms take off for the next century. ☐

Herbert E. Meyer is founder and president of Real-World Intelligence Inc. in Washington. Michael Pincus is chairman of Thunderstone Software and chief scientist for Mnemotrix Systems Inc., both located in Cleveland.



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ANTHONY VALLARIO (*center*) flanked by ROBERT MARTINI (*left*) and EMIL MARTINI JR. In the background portrait is EMIL MARTINI SR. Opposite, Vallario

A SINGULAR REIGN

As Anthony Vallario prepares to retire after 40 years as his company's CIO, he can look back on a career in which business and technology have been literally inseparable

Somebody call the Guinness Book of World Records. This month marks the 40th year that Anthony A. Vallario has been the senior IS executive at Bergen Brunswig Corp., a wholesale distribution company in Orange, Calif. To our knowledge, this makes Vallario the longest-reigning CIO.

In an era in which IS chiefs are known for neither longevity nor fidelity, Vallario's achievement ranks right up there with Lou Gehrig's. As a testimony to that long-lasting relationship, Vallario and Emil P. Martini Jr., will be among the winners of the 1990 Society for Information Management Partners in Leadership Award, given in recognition of exemplary CIO-CEO partnerships.

How did Vallario manage to remain a CIO for so long at one company? His long-standing relationship with

Bergen Brunswig's top executives is a good place to start.

Bergen Brunswig is one of those remarkable companies that have enjoyed spectacular growth under the stable management of a single family. Since Vallario started working there at the age of 20 in December 1949,

the company has grown from less than \$1 million to \$4 billion a year in revenues and undergone 35 acquisitions and mergers. In 1969 the current company was formed when Bergen Drug Co. of Hackensack, N.J., purchased Brunswig Drug Co. of Los Angeles. Yet he has served

under just two CEOs—Bergen Drug founder Emil P. Martini Sr., and Emil P. Martini Jr., who became chairman and CEO of the company upon his father's death in 1955.

One of the enduring characteristics of the Martinis has been their abiding interest in technology. According to



with Emil Jr. in 1969.

BY ALLAN E. ALTER

PHOTO LEFT BY LOIS GERVAIS, PHOTO RIGHT COURTESY OF BERGEN BRUNSWIG CORP.

"You have to stay up with the business aspect first and foremost. Then let the business dictate the technology you want to explore."

—Anthony Vallario

Vallario, Martini Sr. was one of the first drug wholesalers to automate the billing process by installing IBM punch cards and tabulating machines to print invoices. Similarly, the younger Martini has always been a firm believer in the importance of IT for advancing his company into the future. Over the years, "he has taken the time to learn and understand information technology," said Vallario.

When Martini Jr. entered his father's firm in 1953 as a buyer, he became interested in Vallario's work as supervisor of the Tabulating Depart-

ment. Their mutual interest deepened into a close relationship. The two men—then in their mid-20s—worked side by side to design and develop Bergen Drug's inventory management and purchasing system. They shared late night pizzas and hot dogs at the office, played softball and socialized in their free time, and attended IBM courses together. Vallario also

became especially close to Emil Jr.'s brother Robert, who is now the president and COO of Bergen Brunswick. "Robert has been like a brother to me," said Vallario.

Although Vallario said he no longer socializes with the Martini family as often as in their salad days, those early years—and the Martinis' appreciation for IT—built a foundation of mutual trust and respect.

Martini Jr. echoed the importance of trust and loyalty in his relationship with Vallario. "Tony is intensely loyal to the company," Martini said. "The

fact that he exhibited that quality made me want to depend on him even more heavily—[more] than I would with someone who I thought would be with us for a few years and then skip somewhere else. I felt [that] having the same person following through on our programs was very important, rather than having a [different CIO] every three to six years."

Vallario ran the Tabulating Department until Bergen Drug installed its first computer, an IBM Ramac 305, in 1959. He was then put in charge of the fledgling Data Processing Department, and has run that department (now called Corporate Information Resources) for 31 years.

Vallario may run IS, but he has never forgotten that he works in the drug distribution business. When asked how he kept up with technological change, Vallario answered that "you have to stay up with the business aspect first and foremost. Then let the business dictate the technology you want to explore." His greatest challenge, he said, is "finding a way to install [a useful] information link between every customer and our company."

To do that, he stressed, it is crucial to understand what pharmacists need from wholesalers. In order to gain a better understanding of pharmacists and the ways other Bergen Brunswick staffers serve them, Vallario has picked orders at the company's distribution centers and taken inventory at Bergen Brunswick's



EMIL JR. and VALLARIO in 1959, with the IBM Ramac 305



VALLARIO, in 1964, stands in Bergen Brunswick's "automated data center," where punch-card data is being printed out.

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JIM MCLAUGHLIN, LINDA BURKETT and VALLARIO: *marrying business and technology*

pharmacy customers.

The company's officials praise Vallario's way of mixing business with technology. He "thoroughly understood the drug distribution business to begin with," said Jack Fay, Bergen Brunswig's vice president of corporate affairs, "then [he] taught himself what he needed to know about computing and melded the two together." Linda Burkett, Bergen Brunswig's director of data processing, said that she has "never met any other IS director or vice president who can understand the business unit so well and marry it with technology."

The result has been systems that have won recognition for excellence. Bergen Brunswig was voted onto the 1989 CIO-100 list of IT innovators by a panel of experts on the wholesale distribution industry. And Vallario is considered to be one of the pioneers of the EDI field.

"I don't care what we do; Vallario is constantly alert to how we can find

a better way to do it," said Emil Martini Jr. "He's not willing to just sit there and say, 'we've got this done and it's working great.'"

But how has Vallario kept up with four decades of changing technology? For one thing, he expects his IS managers and staff to keep him abreast of new IS developments. He uses his director of research and development, Jim McLaughlin, as a sounding board. Yet he is not a passive recipient of other people's thinking. Vallario does his own research.

But Vallario admits there have been limits to what he could effectively explore. "A big problem for me was trying to take on too many technologies at the same time. You become a jack of all trades and a master of none. I don't think I managed that too well," Vallario admits. "It becomes too much to comprehend and you become inefficient. You have turnovers, overruns and projects that do not get done on time. The lesson

Plotting the Learning Curve

Continuing education is part of the job

Anthony Vallario's commitment to training and education runs deep. "We give people the time to learn," he said. "Not just after hours, but during work hours." Vallario requires IS staff to put in a minimum number of course hours each year, according to Linda Burkett, Bergen Brunswig's director of data processing. Jim McLaughlin, director of research and development for the company, said that Vallario "makes managers and directors responsible for raising overall skill levels" within their groups. Their raises are based, in part, on how successfully they have accomplished this and on "how they've improved their own skills" as well.

Under Vallario, the IS department has instituted video training, promoted continuing-education college courses, encouraged attendance at vendor seminars, and insisted upon training from vendors.

Vallario considers organizational learning an especially difficult challenge in IS management. IS people must learn about new technologies, and at the same time do their current jobs effectively with the technologies already in place.

—A.E. Alter

that I've learned is to stop and master them one at a time."

Burkett and McLaughlin describe Vallario as a voracious reader of trade journals, magazines, and reports by technology-trackers such as the Gartner Group and the Meta Group. Burkett said Vallario challenges his vendors by telling them about Bergen Brunswig's plans and

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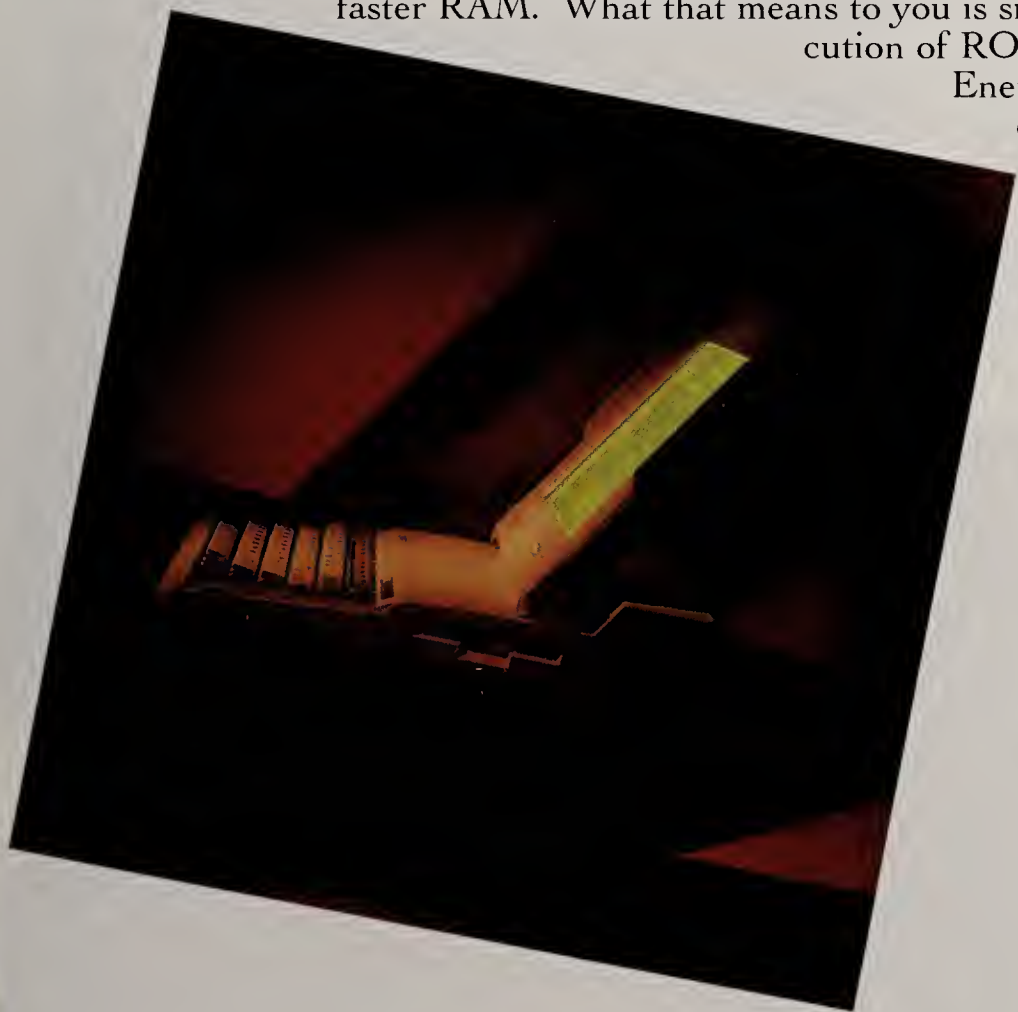
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A unique Tandon innovation provides selectable ROM shadowing, which is another way of saying it copies instructions from ROM memory to much faster RAM. What that means to you is significantly faster execution of ROM-based instructions.

Energy conservation is on everyone's mind these days. The Tandon

LT 386sx does its part, with selectable lower clock speed, and standby mode: automatic or manual turnoff and reactivation of the hard drive and screen as needed.

Add the optional spacious, stylish carrying case, and you're ready for a power lunch. Order in your Tandon LT 386sx today.



STANDARD FEATURES (cont.)

LED indicators for low battery, fixed and diskette drive operation, keyboard status (Num, Caps, and Scroll Lock).

Proprietary 16-bit expansion slot with AT®-bus and RS-232-C signals.

Autosensing AC adapter/charger accepts 100 to 265 VAC input; Nickel-Cadmium battery pack provides 2 to 3 hours portable operation, depending on battery conservation techniques employed.

Built-in speaker with programmable, IBM-compatible sound.

Dimensions: 12.7 in. wide by 13.6 in. deep by 3.4 in. high. Weight 14.5 lbs.

System unit and power/adaptor cord, operation and installation manual, Tandon MS-DOS 3.3 loaded on fixed disk.

OPTIONAL FEATURES

Custom fabric carrying case, 2 MB memory modules (to 5 MB total), external numeric keypad, external 5.25-inch diskette drive, Tandon MS-DOS diskette and manual, Windows™ 3.0, serial mouse

Tandon LT 386sx/40, VGA
\$2,899

Tandon LT 286/40, EGA
\$2,499

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STANDARD FEATURES

3.5-inch high-density, double-sided 1.44 MB diskette drive, or 5.25-inch 1.2 MB diskette drive.

Two-speed 8/16 MHz 80386SX processor (SL 386sx);
Two-speed 8/25 MHz 80486 processor (SL 486); keyboard selectable clock speeds.

1 MB memory, diskette drive controller, video controllers, IBM-compatible parallel and two RS-232-C serial ports, optional math co-processor socket on main board.

Built-in single screen system setup utility automatically configures diskette drive, security and serial and parallel options; easy selection of security levels, external peripherals, and routine functions such as date, time, language, etc.

Universal 101-key enhanced layout, low profile with 12 function keys; LED indicators for Num Lock, Caps Lock, and Scroll Lock Keys; password security.

TANDON SL 386sx™ PUTS POWER ON YOUR DESK WITHOUT TAKING IT OVER. \$2100.

We've combined Intel 80386 power, technology and features with unique Tandon innovations to deliver outstanding performance in a compact, slimline package.

Full 32-bit internal processing means that the Tandon SL 386sx (the SL stands for slimline) will run your existing applications faster. While its advanced instruction set lets you also move up to advanced multitasking software and applications, such as Windows 3.0. Of course, all 386SX systems will do that. Here's why ours does it better:

A proprietary Tandon chip called MIAT™ (which stands for Mapper-Integrated AT) provides a higher level of systems integration. But don't let the buzzwords baffle you. What we're talking about is fewer components and greater reliability.

The low profile, small footprint package doesn't dominate your desk, yet contains more than enough internal expandability for most applications. For which you can thank another aspect of the Tandon SL 386sx: communications ports and mass storage controllers are all resident on the main board.

And that's enough innovation to keep most users happy for a long, long time.



S US FROM THE COMPETITION.

TANDON SL 486™ IS ABOUT AS MUCH POWER AS ONE PERSON CAN HANDLE. **\$4399.**

If computers were cars, this one wouldn't be designed yet. We've put the awesome power of the Intel 80486 chip in a slimline package to produce the ultimate single-user power machine. Not to mention an extremely economical way to put 486 technology at your fingertips. And it's no slouch when it comes to networking, either.

As you may know, 486 technology combines the 80386 instruction set, numeric coprocessor and 8K memory cache on a single chip. All of which frees up the memory bus from data read bottlenecks, and results in faster operation.

But with the input bottleneck removed, the next place your programs can get bogged down is - you guessed it - output. So

in the Tandon SL 486, we've added an exclusive new feature to nip that problem in the bud: the PowerPoster™.

This is our brand name for an intelligent buffer that speeds write operations to RAM. Another advantage of the PowerPoster is that it eliminates the need for the more expensive external cache memories found on some of our competitors' 486 systems. And leads a step closer to the Holy Grail of computer design: greater price/performance.

The Tandon SL 486 also incorporates two other Tandon innovations that we hope

you're becoming familiar with: Tandon's Memory Mapper, providing Flex Shadowing™ of RAM for faster processor performance, and the MIAT chip for greater integration, and resulting higher reliability.

If you're a power user considering a high end 386-based system for compute-intensive applications such as CAD, graphics, or large spreadsheets, the Tandon SL 486 was designed to win you over.

STANDARD FEATURES (cont.)

Two 5-1/4 inch and one 3-1/2 inch drive bays.

Personal password protects data and software.

Three 16-bit AT-compatible expansion slots and one XT™ compatible slot.

130-watt, fan-cooled power supply; switchable to 115 volts or 230 volts.

Built-in speaker with programmable, IBM-compatible sound.

Dimensions: 18.3 in. wide by 16 in. deep by 5 in. high.
Weight 31 lbs. (SL 386sx); 32 lbs. (SL 486).

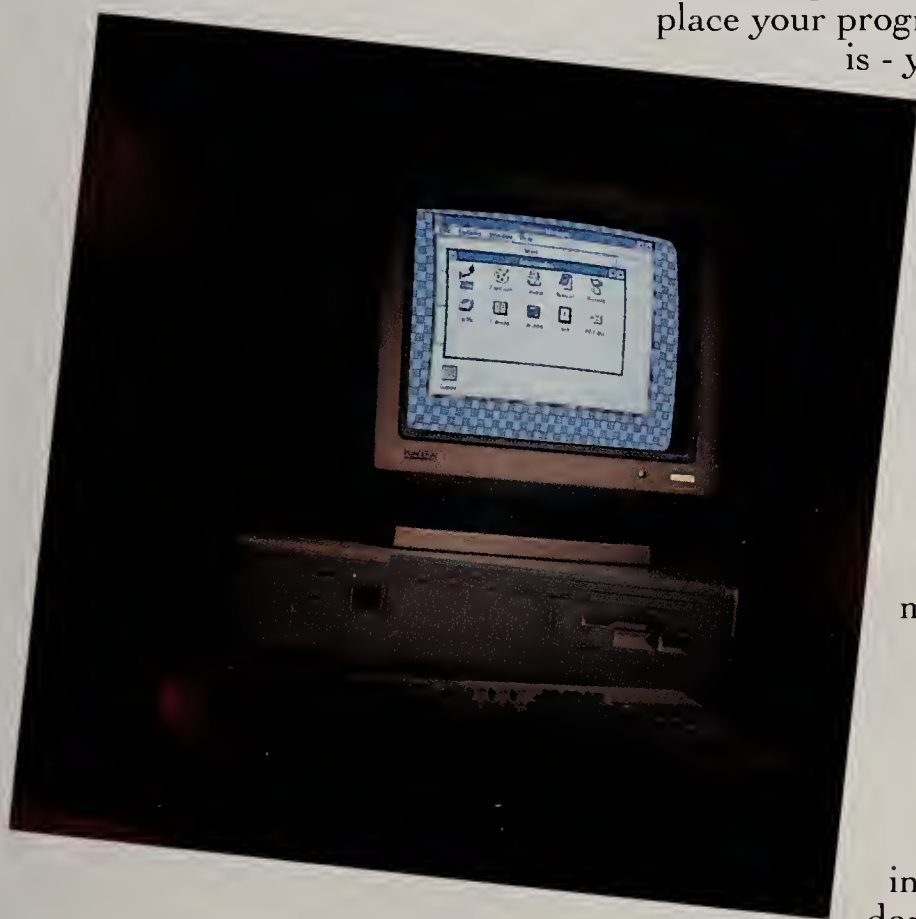
System unit, keyboard, power cord, operation and installation manual, Tandon MS-DOS software and manual.

OPTIONAL FEATURES

SL 386sx and SL486:
Memory modules (to 5 MB total).
Windows 3.0 (Windows 3.0 and Microsoft Serial Mouse are included with all configurations of 2 MB or more), 80387SX math co-processor (SL 386sx); 110 MB or 200 MB IDE fixed disk, serial/bus.

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Both systems include
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asking them about new technology on the horizon that may help. He has been an active member of professional associations such as SIM, [the Society for Information Management], and often attends programs at leading universities such as Harvard and UCLA. "The man doesn't know how to coast," said McLaughlin.

Therein lies another source of Vallario's longevity. Vallario considers himself an enthusiastic and hard worker. There's been many a time, he said, when his enthusiasm for a project led him to work late into the night and sleep on a cot in his office. He also takes pride in being a technological visionary. But when others talk about him, it's his persistence they speak of most of all. "He's stubborn, a bulldog," said Fay. "When he has an idea, no matter what anyone else thinks, he will pursue it."

McLaughlin, who has known Vallario for 26 years, said he is both the Winston Churchill and Lieu-

VALLARIO, a thorough study, is described as not knowing "how to coast."

tenant Columbo of IS. Like Columbo, McLaughlin said, Vallario has a disarming way of drawing answers out of people. "He'll just be asking you questions, and all of a sudden you've built his case for him. Before, you thought it couldn't be done. Then he has you doing it and making sure you will do it." And like Churchill, Vallario won't give up. "He is one of the most tenacious guys I've ever come

across. When he gets an idea and can grasp it, he will never let it go. He works at it until it's perfect."

"First and foremost, Tony is a risk-taker," said Denny W. Steele, who was brought to Bergen Brunswig from American Stores Inc. early this year to become Vallario's successor. (Vallario will retire in August 1991.) "When he sees things to do, he takes the technology, seizes the

Tony Vallario's Tenure Tips

How does an IS executive last 40 years with the same company?

Vallario believes that trust and respect are the keys to long-term survival. "Develop trust with all levels of management, above and below you. You earn trust through perseverance, sacrifice, loyalty [and] respect for your boss and . . . subordinates." In addition, "develop the ability to work

with management at all levels. Provide applications that benefit the organization, and know what applications really provide the key benefits."

Beyond these basic values, Vallario offered the following list:

- You must be young enough to embark upon a technology career that is exciting, challenging, changing and growing, because today's problems are history.
- Join a young company whose management has a vision, a dream, a goal, and who wants the company to grow.
- Learn the business and become part of the vision and growth. Design, develop, train, install, operate and support.
- Learn the industry and gain the perspective of where it is today and what the mission-critical business applications are.
- Dedicate your time to make each process a success.
- Share your success with others.
- Learn that problems are only temporary setbacks, and should not be regarded as failures.
- Continue to look to the future for new frontiers.
- Learn that you have to give and take as you, the business, people and technology all change.

—A.E. Alter



initiative, and pushes this [IS] organization. And where he had to sell [a new technology], he sold it."

Everyone's favorite example of Vallarian tenacity and risk-taking dates back to 1974. Vallario sought to make Bergen Brunswig one of the first companies to introduce hand-held order-entry devices to read bar codes. The effort ran into all kinds of difficulties, recalled McLaughlin. Customers objected; they felt more comfortable placing orders with Bergen Brunswig's sales force than via the terminals. There were technical problems. The manufacturer was slow to deliver the terminals. And as floppy disks had not yet been invented, the terminals used cassette tapes. "They worked well for music, but poorly for data," said McLaughlin. "The units would eat the tape."

But after making sure he had the support of his top IS managers, Vallario "made a stand that this was how we'd do order entry in the company," said McLaughlin. He won Emil Jr.'s backing, then worked alongside his IS team for many hours to improve the terminals and build more advantages into the system. And to assuage nervous clients, he built a customer back-up system, using touch-tone telephones, in just 90 days.

"It took two years of effort to improve the system," McLaughlin recalled. "There was a time when he almost stood alone, saying this is the way it should be done. But he was right. That particular technique turned this company around, in terms of efficiency and automating our ordering process."

Of course, it took an IS organization and the support of his key managers to help build and manage Bergen Brunswig's systems. While IS turnover at the company is average, according to Vallario, the firm has retained many senior IS managers for decades. In large part, Burkett and McLaughlin attribute this loyalty to two factors: the opportunities and challenges this fast-growing company offers its managers, and the support IS receives from the Martini family. But both paid tribute to Vallario's personality and management style as



VALLARIO with his successor, DENNY W. STEELE: "Tony is a risk-taker."

well. "Forty percent is Tony," said Burkett.

McLaughlin emphasized Vallario's warmth, his readiness to smile and say hello, and his way of treating employees as family. "It's very unusual for a person to be as warm as he, yet be the driver he is," said McLaughlin.

"Tony is a great motivator, challenging you all the time," said Burkett. "In the 22 years I've been here, I've never been bored."

One of Vallario's strengths, they said, is that he (with Martini's blessing) always provides his staff with all the resources they need. "Ask people [here] why they stay so long, and they say other places don't give you tools to work with," McLaughlin said. "They aren't empowered to do the job. I've been able to do lots of wonderful things in this company because he made it happen. It was his beliefs, and his ability to talk to the CEO, that gave us the ability to go ahead and do these things."

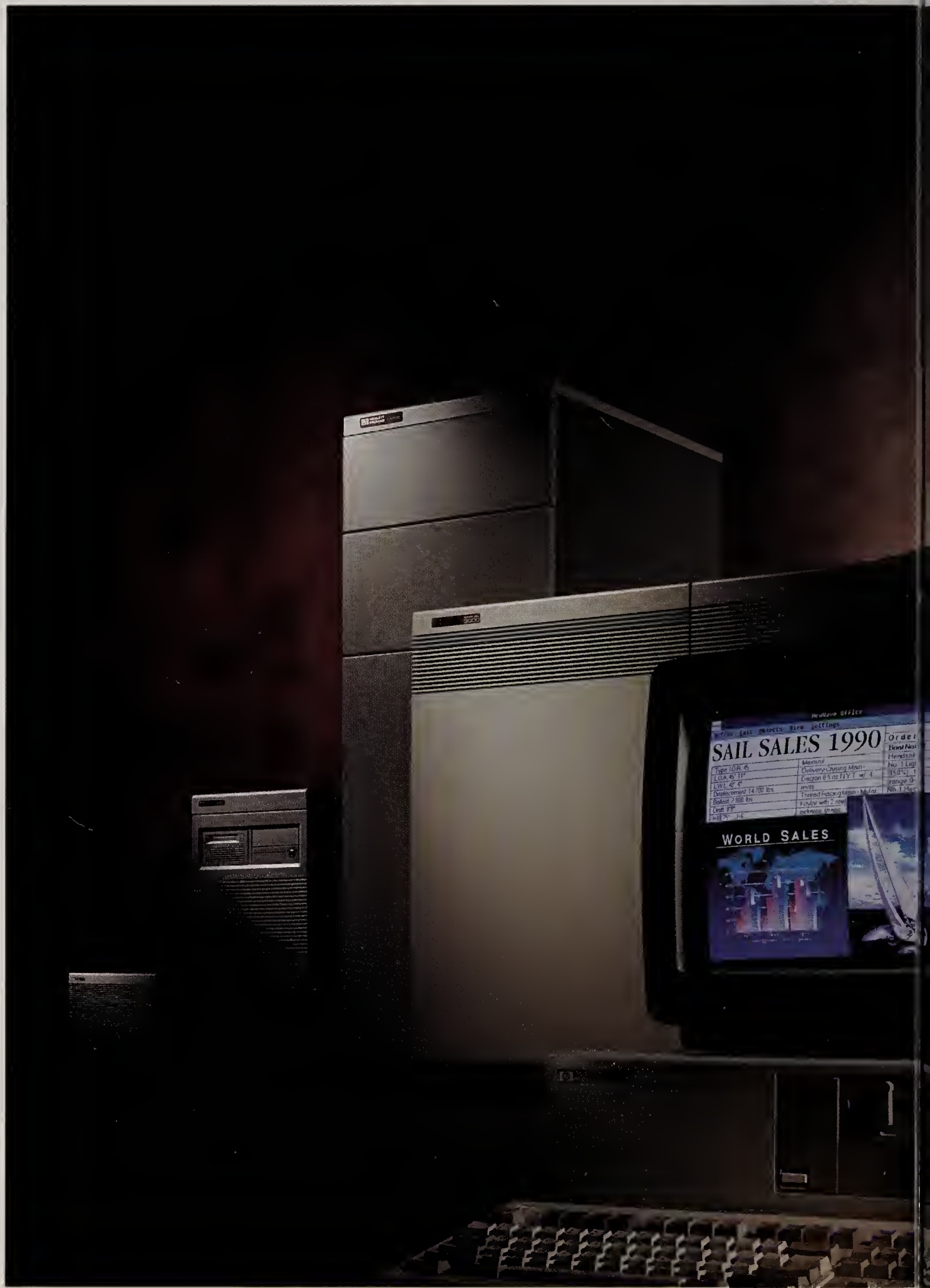
It's also helped that Vallario's management style has changed with the times. "He comes from the era when the classic style was to tell people what to do," said McLaughlin, but over the years, he's gradually evolved into a manager who "works through people without telling them what to do." In other words, he empowers and enables his staff to do their jobs.

Thus it's especially noteworthy that as Vallario has grown older, he has come to place far more stress on training and education—what he calls "organizational learning"—than he did when he was younger. It is "the biggest thing I want to leave here as a legacy," he said.

Over the years, he explained, technology and training issues have become more complex, especially since the introduction of the PC. And as Bergen Brunswig has grown, Vallario has had to rely on others to implement new systems. Besides, he said, "as you get older, you become wiser." ☐

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It also integrates information from your current applications and integrates existing DOS applications, regardless of the vendor. (IBM OfficeVision does not support DOS.) What's more, HP NewWave Office is based on industry-standard networking, and runs on HP's UNIX* system-based computers, HP 3000 systems and OS/2 operating systems.

Beyond this, HP NewWave Office incorporates an extraordinary new "agents" capability. Agents can handle a wide range of sophisticated tasks. For instance, they can automatically gather data, analyze it, generate a report and distribute it.

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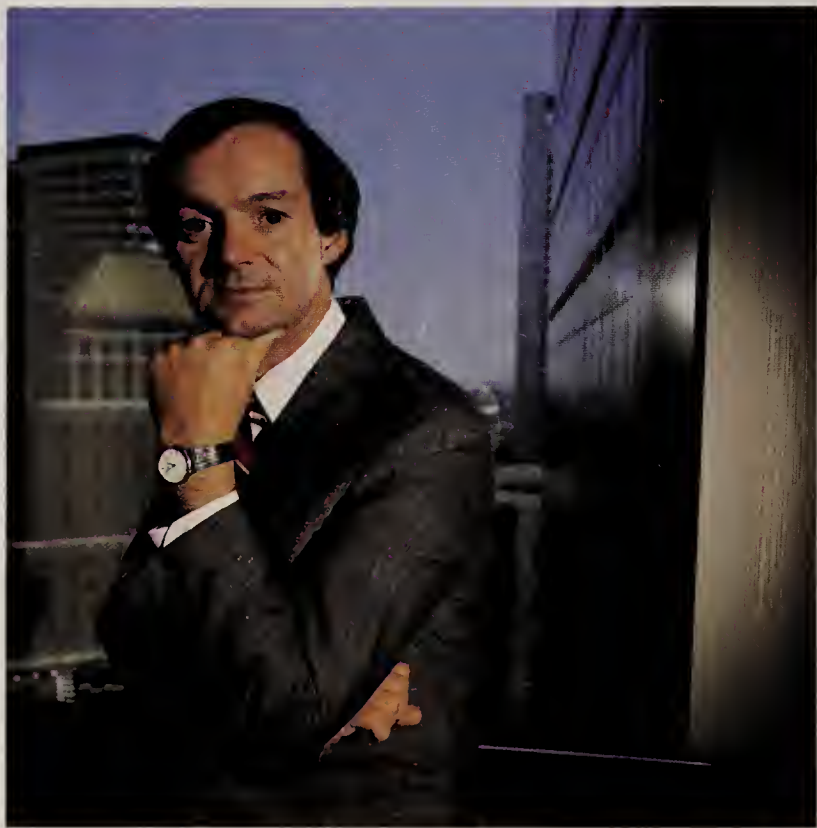
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IT

Scratch just about any customer service, and underneath you'll find information technology adding in the value

BY MEGHAN O'LEARY

AT YOUR SERVICE

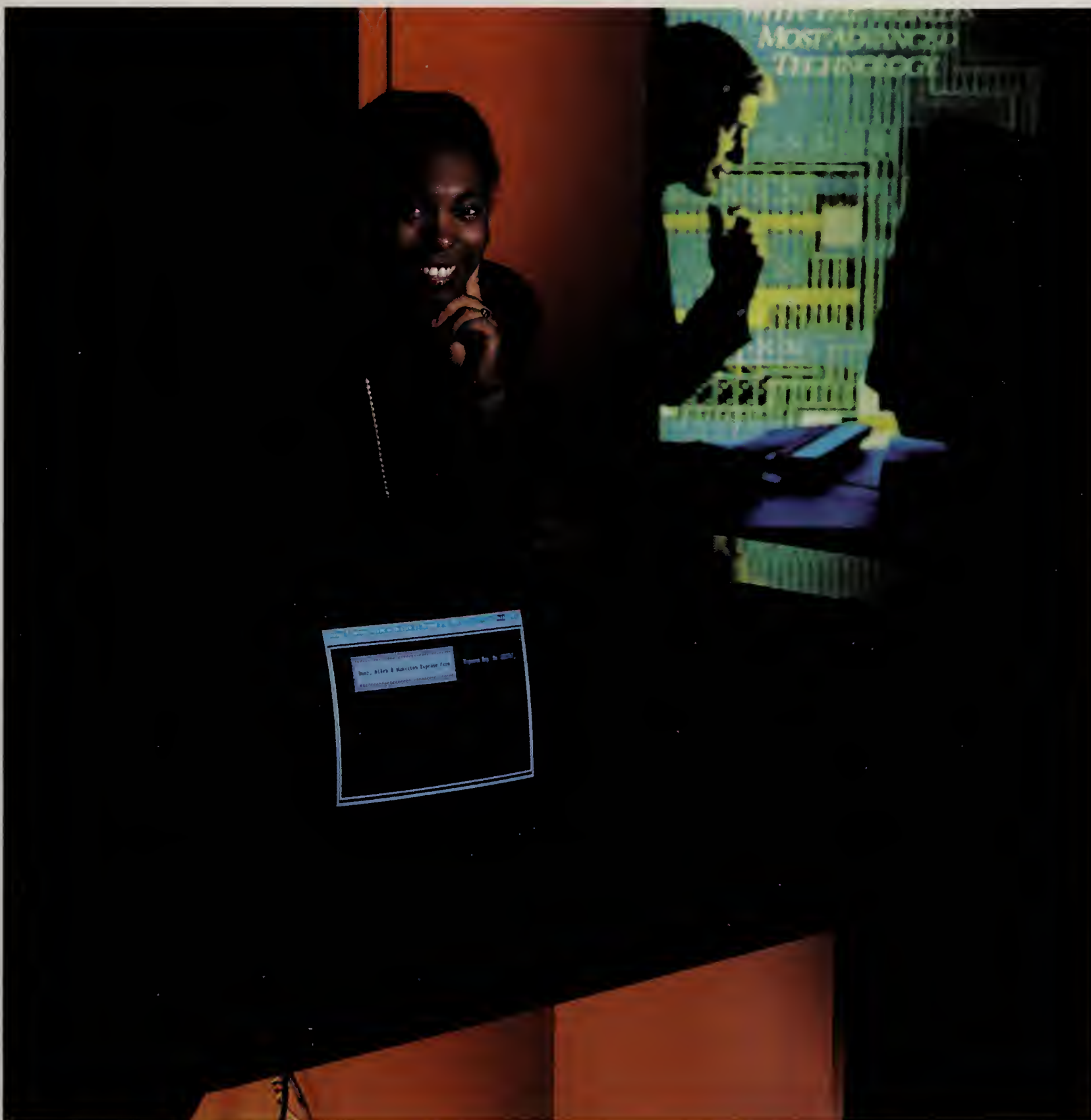


HINES: *At Fidelity, customer service means offering investors "an extremely wide range of choices."*

The first law of customer service is that satisfied customers will tell two or three friends about their good experiences while the unsatisfied will tell five or six about their bad ones. Worse than that, according to some customer-service managers, unsatisfied customers might just take their business elsewhere, and the offending company will never know about it.

Increasing competition and nearly saturated markets are givens in almost any industry today. And while the competition for customers heats up, customer service is fast becoming an important way for companies to differentiate themselves from a sea of competitors.

Information technology promises to help companies provide more consistent levels of service and cement relationships with customers. It also promises to change the definition of service. The companies that have built electronic profiles of customers' buying patterns, calls and personal histories now have the opportunity to turn that information into powerful sales and marketing tools that will allow them to anticipate custom-



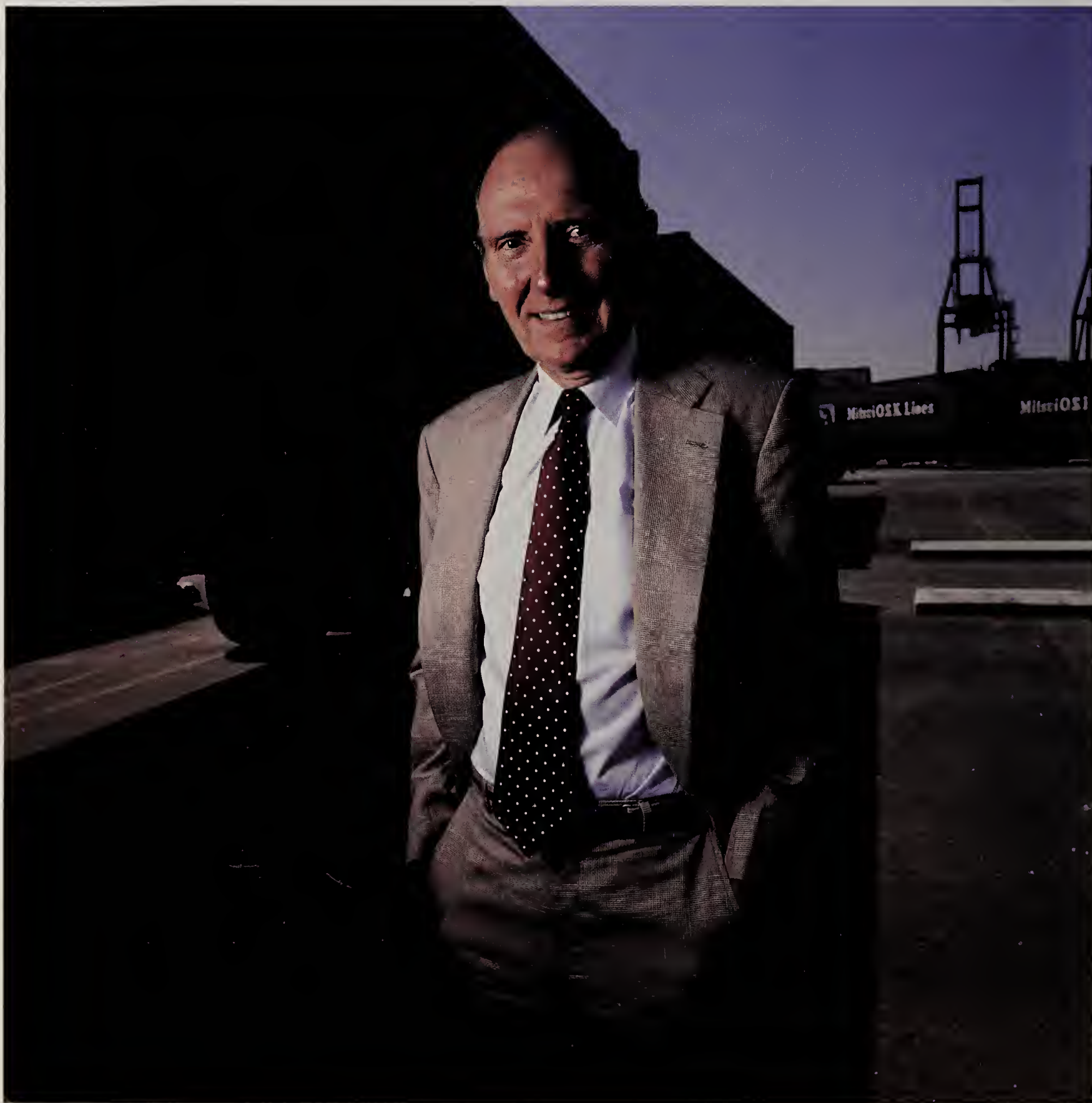
TUCK: *Customer service today is proactive, not reactive.*

ers' future needs. In trying to take advantage of such a resource, however, businesses are now facing the challenge of vertically integrating departments and systems across the company.

What lies behind all this activity? "It's the service that [customers] think [they're] going to get that really drives things," said Larry McNabb, executive vice president of Bank of America's retail banking division in San Francisco. "There are only so many ways you can differentiate a loan. Technology is the way we'll be able to deliver

[added value] in a cost-effective manner."

Technology offers such promise in this area because it allows companies to pull answers instantaneously from vast pools of product information and customer profiles. According to James Brian Quinn, Buchanan professor of management at the Tuck School at Dartmouth College in Hanover, N.H., it also allows companies to balance two often-incompatible goals. "The most interesting thing [about using IT to serve customers], from a strategic viewpoint, is that if



MARSHALL: *Information systems give shipping customers intimate access to cargo status data.*

you set up your IS properly, you can obtain both maximum flexibility and lowest cost simultaneously."

As in other areas of business, when IT becomes a more critical tool in customer service, it changes the nature of the beast. IT "is giving a much greater breadth and scope to the meaning of customer service," said George B. Marshall, senior vice president of marketing for Mitsui

O.S.K. Lines (America) Inc., the U.S. subsidiary of a Japanese freight transport company based in Long Beach, Calif. "It [allows us] to provide so much more information so much faster, and to anticipate questions before they're asked."

As the nature of customer service changes, so must companies' approaches to it. "We think in the '90s . . . that one has to do more than

just feel really bad when a mistake happens," said Sandra G. Tuck, a principal in Booz-Allen & Hamilton Inc.'s Information Industry practice in Bethesda, Md. Toward this end, she explained, customer service is evolving into a more proactive endeavor, in which a company anticipates and acts in advance of customers' responses, rather than just waiting for them and reacting.

PHOTO BY LOIS GERVAIS

Bank of America's McNabb pointed out that customers who are able to check the status of a loan or credit application without a service middleman are spared much of the anxiety of waiting for approval—or being rejected.

Customers—whether individual or commercial customers—have a pretty clear set of needs, according to most customer-service experts. They want correct answers, responsiveness and a sense of personalized service. These become harder to provide as a company grows larger.

Tops on the list of customer concerns is responsiveness—the service that IT is perhaps best suited to provide. Whether customers want immediate answers to product queries or guaranteed on-time delivery of a shipment, powerful databases, improved communications with the provider company and specialized transaction software allow them to get responses almost in real time, according to Quinn.

For example, freight-transport companies such as Mitsui offer their customers real-time cargo-tracking systems that allow them to follow goods from origin to destination.

For the individual consumer, services such as Bank of America's credit authorization system, which uses the company's customer profiles, speeds up the loan process—auto loans can take a matter of hours—and lets the customer check the status of an application by phone.

In many cases, responsiveness boils down to addressing customers' demands for convenience, enabling them to do business in the manner

and at the time that best suits them. For example, Bank of America has a 24-hour-a-day, five-day-a-week customer-service telephone number through which customers can get account information or apply for loans; Kimberly-Clark Corp., of Dallas, lets commercial buyers of its tobacco paper order paper as they need it over an electronic network that ties into the customers' just-in-time manufac-

turing processes; Mitsui makes smaller and more frequent deliveries to accommodate its customers' cost- and inventory-cutting measures.

Sometimes customer service means getting out of the customers' way—a notion contrary to the highly attentive approach that characterizes service for so many organizations (see related story). In the name of choice, Boston's Fidelity Investments

What's In It For You?

.....
If properly planned and exploited, customer-service strategies can return plenty of value to the company

Although it's considered more blessed to give than to receive, some of the consequences of serving the customer are demonstrably self-serving as well. A company stands to gain in a number of ways from fulfilling the responsibility that comes with making customers privy to the company's business. For instance, the information technology that supports Bank of America's credit-approval system also allows the bank to approve loans faster and more judiciously than before. As the technology hastens the approval process and reduces the potential for manual errors, it also lowers the bank's operating costs.

By using systems to support the information gathering and analysis activities that are the heart of customer service, many companies are also learning to use their workforces better. Booz-Allen's Sandra G. Tuck tells of a client in the transportation industry that removed its highly trained, highly paid

claims adjusters from the initial support loop by giving customer-service people electronic access to shipping information and the authority to make decisions on small claims. The company then put its claims adjusters to work on more complex claims. In the process, the company boosted the morale both of its service reps and claims adjusters, and reduced the claims response time from 90 to 30 days.

Kimberly-Clark's John Kohler, senior vice president of administration, observed that customer expectations can spur a company on to be more effective in its use of technology. The company's EDI programs with customers have become "a minimum level of doing business with our major customers," he said. "There is no other way we can accomplish [our clients'] business goals. Our customers are putting pressure on us to more tightly integrate our own systems."

Many of Kimberly-Clark's customers are involved in just-in-time processes that give them a smaller window of time between ordering raw materials and using them in production. The better Kimberly-Clark can integrate its order-entry, warehousing and transportation systems, the less likely are its customers to experience unfilled or late orders.

"If you asked me where we're going to be spending most of our dollars [in the future]," Kohler said, "it would be in systems integration."

—M. O'Leary

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***AT&T ISDN is working
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Right now, when their switchboards are all lit up, hotels are using AT&T ISDN to route calls automatically to the next available agent, even if they're in another location. That maximizes their staffing efficiency. Also, with our automatic number identification feature, agents have become more accurate and are saving time, opening the door for more personalized service.

So now that you know how well it's working for your competition, let the advanced technology of AT&T ISDN increase productivity and save money for *your* business today.

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allows its individual and corporate investors to bypass service representatives altogether and inquire, for example, about the hourly value of a stock account by calling and entering information via the telephone keypad. Customers can also use the keypad to transfer money from one mutual fund to another.

While improved communications technologies help companies add speed and convenience to their service offerings, the resource underlying these technologies is information. People involved in customer service agree that information about customer activities, products and markets is a valuable resource that ultimately lets companies provide better, more personalized service. This can involve services personalized for individual needs or localized for communities. Bank of America uses its demographic databases to tell it

a wide-area network. That way, according to Rick Rankin, an AMS senior principal and client manager in Redwood City, Calif., client managers can monitor calls that would normally be handled only by technical support people but that the managers think might need extra attention. Before installing the call-scanning software, Rankin said, client managers relied on support reps to call them when they felt a client needed extra attention. "That was constantly fallible. People would forget to do it or send [voice mail messages] to the wrong person."

Another example of an efficient internal process that enhances customer service is Bank of America's automated collection service. BofA—a client of AMS—set up a centralized collection-activity database with AMS's help. The system tracks customer payment activity, as well as

"Through the information system approach, [customers are] right inside our ship from the time the cargo's booked. . . . They're kind of riding with us, looking over our shoulder."

—George B. Marshall

where it needs bilingual tellers and service reps. It is also working on bilingual ATMs in Spanish and Chinese.

Better service is as much a reflection of internal operations and attitudes as it is of external relationships; and it can be achieved by as simple a means as improving communication within a company. American Management Systems Inc. (AMS), a software and professional-services provider in Arlington, Va., has recently implemented an internal software system that each day scans a database of customer hot-line calls to identify problems that could require special attention. The system sorts the calls by client and nature-of-inquiry and sends reports to individual client managers across the country via

any phone calls made or late-payment notices sent to customers. It helps BofA be more efficient in collections, and the single source of data reduces the risk of billing errors; but it also enables the bank to avoid harassing and alienating customers with duplicate notices or phone calls demanding payment.

Centralizing information has proved to be the key to better service for many companies. Customer service at Polaroid Corp. in Cambridge, Mass., languished until the company automated it three years ago. Prior to that, Polaroid's representatives had to answer customer questions about over 700 products by consulting stacks of thick notebooks—and their own memories.

"Sometimes we'd get inquiries about products we stopped making 10 or 15 years ago," said Roberta Hurtig, the director of the consumer services division. Inconsistency and inaccuracy dogged the system until the reps were given access, via Apple Macintosh computers, to a database of product information on a central Digital Equipment Corp. VAX mini-computer. Not only have the department's answers improved, but its services have expanded. A database of maps and distributor information, built upon Apple Computer's Hypercard, lets reps call up graphics to pinpoint customer locations and nearby product suppliers by zip code.

As companies discover the value of making more information available to service representatives, many are taking the next logical step by making that information directly available to customers.

Bank of America's McNabb pointed out that customers who are able to check the status of a loan or credit application without a service middleman are spared much of the anxiety of waiting for approval—or being rejected. Information in this form can make the customer feel as if he or she is in control of the transaction.

Customer control is also built into Mitsui's Navi-Gator cargo-tracking system—which was designed and built by Combined Data Resource Inc., in Jersey City, N.J., a joint-venture owned by Mitsui and its three North American shipping agents. Before the system went online, said Marshall, "customers more or less had to rely on what the salesperson or operations manager told them was happening to their cargo along the way. But now, through the . . . information system approach, they're right inside our ship from the time the cargo's booked. [They see] the good and the bad, right through the sailing to the port of discharge. They're kind of riding with us, looking over our shoulder."

According to Fidelity Vice President of Marketing Michael Hines, providing this sort of access is as much a business obligation as a com-



HURTIG: The calls going out to customers should exceed those coming in.

petitive lever. "It's increasingly important that companies hold themselves accountable to do what they're supposed to do," said Hines. "If I [as a customer] sent my check in last Tuesday, I want to know where it is. A lot of things can be lost in the [manual] process, and people are not tolerant of that. Having your processes in order is of the utmost importance today. People do not want to do business with people who do not know what they're doing. Institutions are not held in as high regard as they once were. People question them and want things done correctly.

"[Fidelity] didn't use to be the largest [mutual funds broker]," Hines continued. "We're the largest now, and our market share continues to grow. People can take their money and go with it anywhere they want. And . . . they're taking it from other places and bringing it here."

This suggests what may be the alpha and omega of effective customer service: improved overall business performance. Beyond the technology and efficiency gains many companies realize from improved service, the greatest benefit of custom-

er-service systems is that, by keeping databases of customer profiles, complaints, questions and purchasing patterns, an organization can turn its customer-service system into a marketing and sales tool. Financial-ser-

"Many things can be grassroots experiences, but customer service is not one of them."

—Sandra G. Tuck

vices companies are already doing this, according to Booz-Allen & Hamilton's Tuck, through relationship banking and event-driven marketing in which all the pieces of customer information are combined to create a comprehensive view of the customer. Demographics, financial statements, family information and buying patterns can help a company anticipate what sorts of products their customers will want to buy. Companies that really know their customers well can anticipate customer problems as well as needs. But the epitome of the customer-service resource—the marriage of service information systems with sales-and-marketing or design-and-manufacturing systems—has not yet occurred at most companies, according to Tuck.

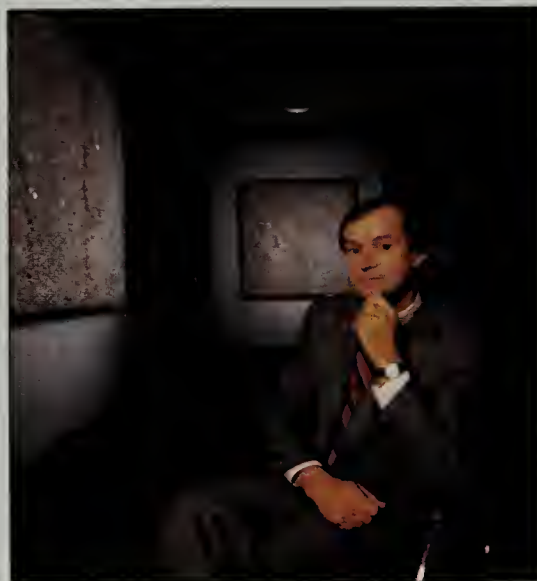
Polaroid has begun to put its customer information resource to work by indexing its customer calls in terms of the types of problems and products involved and even the type of buyer. "This gives us an opportunity to . . . go back inside the company to sales and marketing, manufacturing and [other] strategic business units to let them know customer concerns," said Hurtig. "Without [that capability], you're doomed to continually answer the same questions. But with [it], maybe we'll design products that will more easily address customer issues." According to Hurtig, this sort of information

Do-It-Yourself Customer Service

By allowing customer access to its internal systems, Fidelity Investments can offer buffet-style services that customers serve themselves

Not every customer demands the personal touch. Some are happiest when left to their own devices. Fidelity Investments, the Boston mutual-fund specialist, gives customers a self-service option, if that's what they prefer.

"It's really a question of choice,"



HINES: a question of choice

said Michael Hines, vice president of marketing for Fidelity. "We have been able to offer, through technology, an extremely wide range of choices where investors can customize the way they do business with Fidelity. If we want to keep our business growing, we have to be able to meet the customers on their terms as much as we possibly can." Fidelity allows customers to choose between invisible and "in-your-face" technology—that is, technology as used by service reps or the telephones and PCs custom-

ers use to make their own queries.

But while Fidelity's reps remain out of sight, the supporting technology is hard at work. Handling a customer call is not as simple as routing it to an operator, Hines pointed out.

"There's a tremendous amount of technology that the customer is unaware of, and should be unaware of," said Hines. "The customer thinks that what they want from us when they interface with Fidelity is very simple. All they want to do is find out the price of XYZ fund today and see that their check has been received and that the investment was made. But technologically, the back office is very complex. . . . There are 6,000 employees here working to make what seems simple happen reliably and with high levels of speed.

"I think people are aware that there's a lot of technology going on," Hines continued. "When [customers] say, 'What is the balance of my account?' they know you're not reading [the answer] off an index card, and they want to know you're not."

—M. O'Leary

could affect everything from promotions to the names of products. The acme of customer service, she suggested, is getting to the point where the number of calls going out to customers for sales and marketing exceeds the number of calls coming in.

Such strategic use of customer information offers most companies their greatest service challenge. Tuck estimates that only about 50 percent of the companies Booz-Allen examined in a recent customer-service study were using their IT resources in integrated and effective ways to provide proactive customer service. One of the problems, she believes, is that sales, marketing and customer-service systems often spring up independently. When it comes time to centralize the information and provide cross-system access to all departments, many companies

find the job daunting.

Tuck cautions that systems alone don't constitute customer service. Management involvement is crucial to success. "When I get a call from a prospective client to do some work, I ask them how much support do we have at the top. Many things can be grassroots experiences, but customer service is not one of them. It has to cut across the entire organization. It can't be isolated in sales."

The organizations able to achieve the necessary integration may have a temporary competitive edge, but Mitsui's Marshall advises them to keep an eye out for new opportunities rather than resting on their laurels. It wasn't so long ago, he recalled, that customer service was exclusively a support function. Today people are scrambling to make it more proactive, to catch up with the few vision-

aries—such as Wal-Mart Stores, 3M Co., and insurer USAA—who began leveraging the strategy early. "Am I surprised that customer service has become a competitive tool?" he asked. "As you inch along, day by day, in your job, the importance of the thing gradually hits you. But looking back to the traditional approach to service with customers and what it has become today and what its potential is with customers—darn right I'm surprised."

If integration is within reach, the final challenge is leveraging information that is already in hand. "We all have the ability to have the same technology," said McNabb. "The key is to figure out how to use it. I can have the greatest information in the world, but if I can't train the branch manager how to use it, it's worth nothing." 



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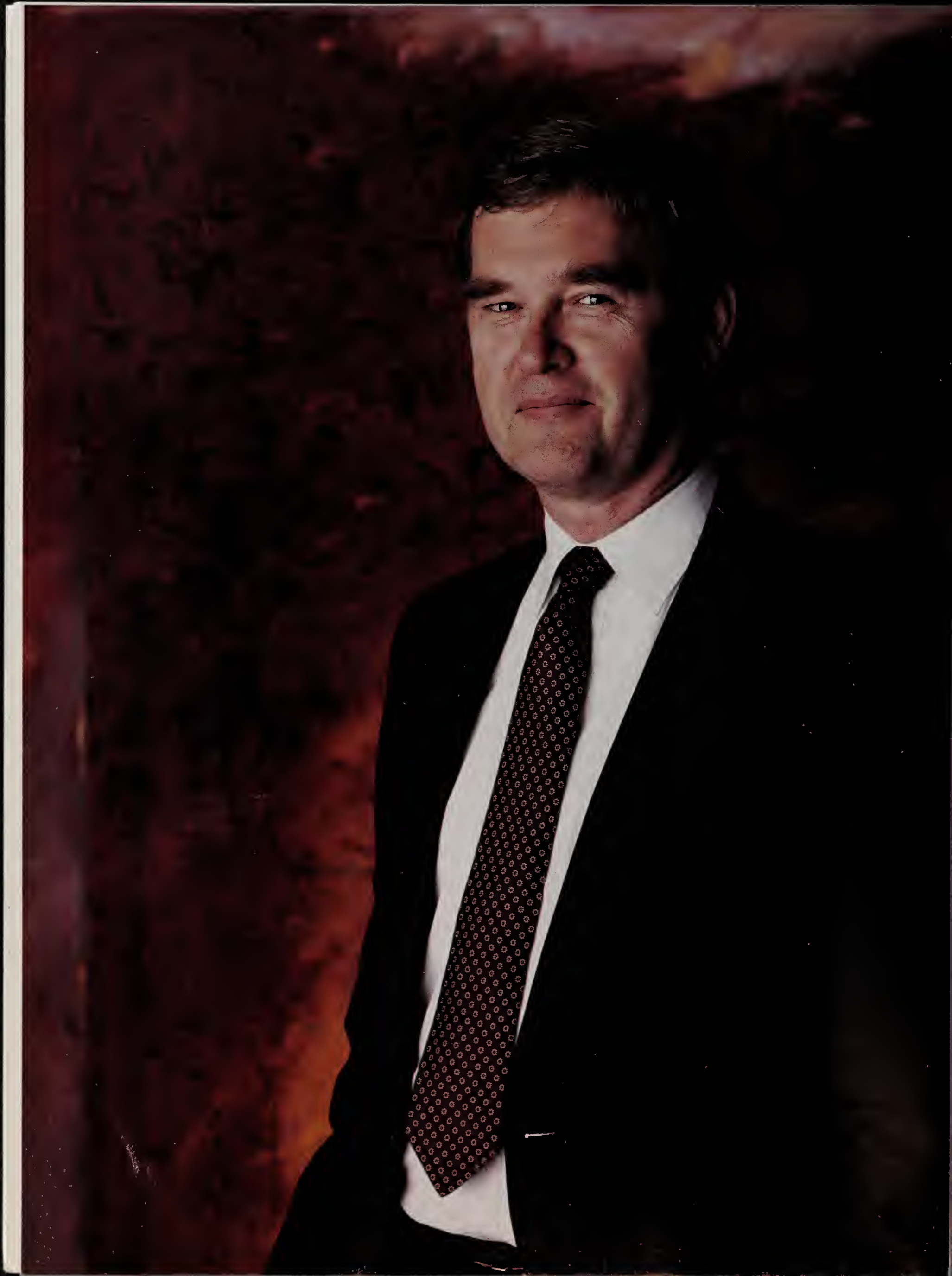
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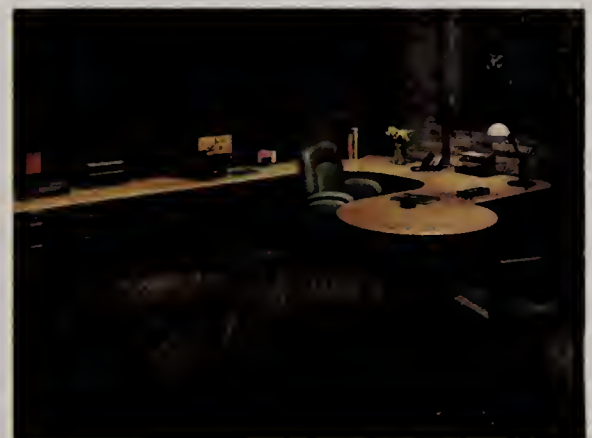
Steelcase Inc., the leading U.S. maker of office furniture, has set up an independent sales-support technology group whose sole responsibility is to help independent dealers sell Steelcase products. Last year a broad portfolio of IT applications brought in more than \$280 million in revenues.

BY ALLAN E. ALTER

Customers are gods—but not the only ones. Unless companies sell directly to the customer, another set of gods must be placated—the middlemen who make up their distribution channels.

Fortune has smiled upon Steelcase Inc., America's largest manufacturer of office furniture, in part because it uses information technology to keep both distributors and customers happy. In 1989, according to Ronald J. Delp, director of Steelcase Automation Services (SAS), IT-based customer services lured over \$280 million worth of business (see related story). That's out of a total \$1.6 billion in U.S. sales for the year. Worldwide sales total \$2 billion.

The office-furniture market is a fractious one, according to Delp. There are few barriers to entry—anyone with a hammer and saw can make a desk. Over 700 manufacturers vie in this market. They survive by focusing on various niches. Steelcase, based in



RONALD J. DELP (left) uses a broad array of systems to help sell a broad array of Steelcase office furniture.

PHOTO LEFT, BY MARK ALCAREZ; PHOTO RIGHT, COURTESY OF STEELCASE INC.

In The Complex World Of A Simple, Practical



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ROBERT SCOTT: *Anything that increases customer satisfaction is an ace in the hole.*

Grand Rapids, Mich., plays in most of the higher-priced niches. But it has won 21 percent of the total U.S. office-furniture market by concentrating most of its efforts in one particular niche—furniture for the offices of large corporations.

These Fortune 1,000 customers are fussy folks who demand a wide range of options and enormous flexibility. According to Delp, 88 percent of Steelcase's business is built to order. To satisfy customers' needs, Steelcase has developed five major lines of office furniture. Each item of furniture can be ordered in a dizzying array of finishes, fabrics, sizes and configurations. Steelcase must regularly cope with numerical complexities that would make a NASA mathematician wince. Theoretically, a single executive desk can be ordered in four *billion* ways; in practice, executives choose from among thousands of options.

Steelcase products are sold

through a nationwide network of 500 independent dealers, each of whom is free to sell other manufacturers' furniture. (The company is one of only two office-furniture makers that rely on independents for all of their sales.) "Our dealer network was set up back in the 1920s and '30s," said Delp. "It's served us well. The dealer is the person who is on the scene, understands local conditions, and has a stake in what's happening in the local market. He's there day to day to do all the things the customer wants to have done." Opening a direct sales channel would be counterproductive, Delp said. "When you compete against a dealer, you lose the loyalty of the dealer. If you want dealers to stick by you, you have to distribute just through those people."

Steelcase also has to win the loyalty of another independent party—architecture and design (A&D) firms. These shops act as the interior designers and contractors of offices.

Steelcase must regularly cope with numerical complexities that would make a NASA mathematician wince. Theoretically, a single executive desk can be ordered in four billion ways; in practice, executives choose from among thousands of options.

A&D firms do not sell furniture, Delp explained, but they are influential in making recommendations to the customer. "There are thousands out there. Anything which causes them to want to work with you works in your favor."

And what makes customers, dealers and A&D firms prefer to work with a particular furniture manufacturer? According to Delp's boss, Director of Information Services Robert Scott, "the biggest way to differentiate ourselves today is by presenting this incredible array of options more easily to the customer."

In the complex world of office furniture, it is vitally important for manufacturers to make it easy to consider options and place orders. Anything that increases customer satisfaction and decreases frustration is an ace in the hole for the manufacturer.

And so Steelcase—taking advantage of its financial resources as the office-furniture industry's largest company—has made enormous investments in IT in pursuit of customer satisfaction and service and to showcase the flexibility with which its offerings can be selected and assembled.

For eight years, Delp has been the point man of this effort. SAS, which creates and maintains the systems

that help Steelcase's distributors and customers, enjoys a fair amount of autonomy: It and its three predecessors—Field Information Systems, Field Automation, and Hedberg Data Systems (a once-independent EDI company purchased in 1986)—have been run independently from Steelcase's internal IS organization. According to Delp, separation has helped SAS's staff retain its focus and kept it from getting bogged down in day-to-day operational matters.

SAS and its predecessors have built up a broad portfolio of services. Like leading insurance companies and airlines, Steelcase supplies computer systems to its dealer network. These systems enable dealers to place orders, exchange information and better run their businesses. But other SAS offerings go further, providing ways for furniture dealers to help their clients make the most of their space and furnishings.

DAY IN AND DAY OUT, WHAT makes an office environment work well? What do employees need from their furniture or office arrangement to work more productively? These are some of the most im-

portant considerations for large corporations when they set up an office, and two of the oldest services developed by Steelcase help customers answer these questions.

Steelcase's "Survey Analysis" service is used to help dealers and designers plan a brand new office for their customers. It surveys the customers' office workers individually to find what they need and want in their own work spaces. Employees fill out a questionnaire about their working requirements and habits (such as space, privacy and storage) and mail the forms to Steelcase. Steelcase processes the answers by job title and supplies the dealer or A&D firm with a book depicting several furniture configurations that meet the requirements of each title. According to Delp, these recommendations act as starting points for selecting furniture. Turnaround time for this service is five days.

Delp's group has also developed a complementary service, called "Workplace Audit." This service asks a customer's employees about how well their current office environment works. Dealers use it as a sales entrée, or as a follow-up service to Sur-

Many Happy Returns

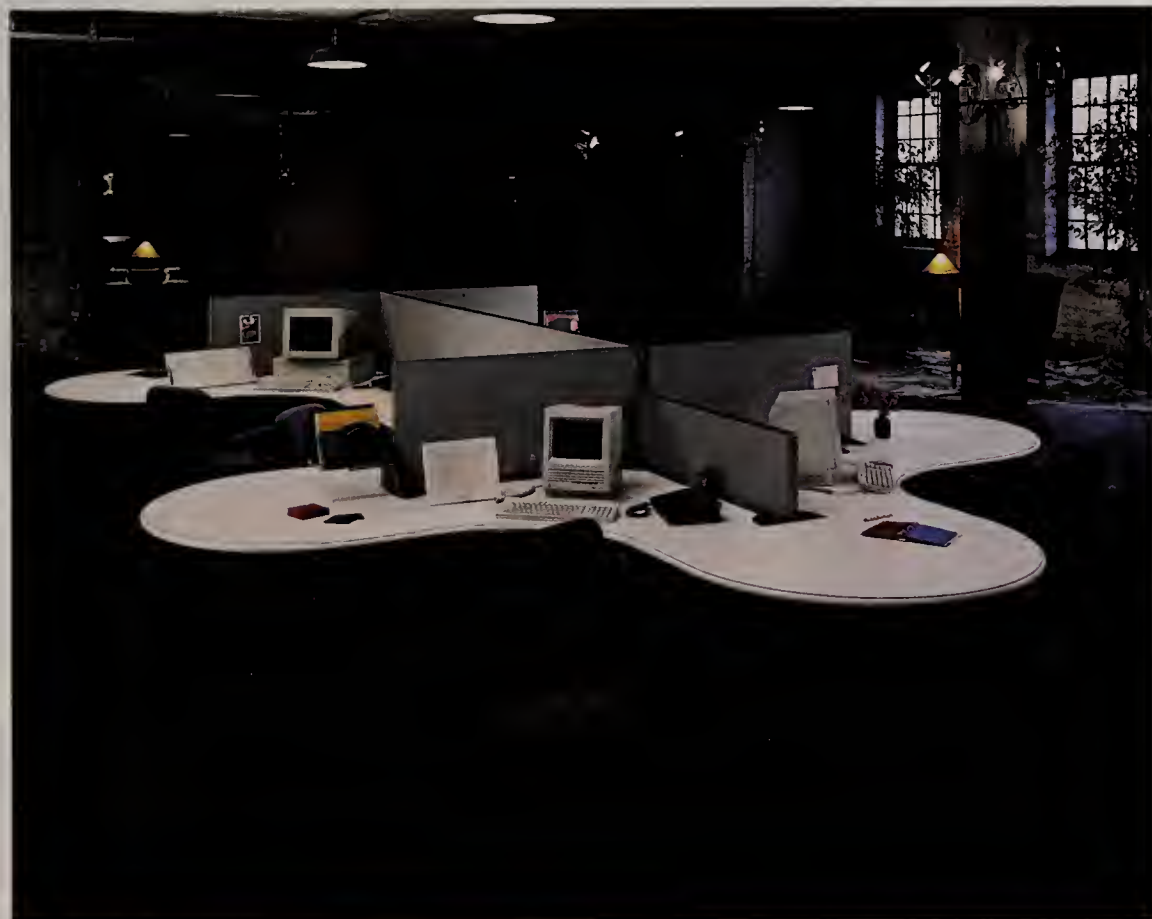
It's not hard to justify investments in technology when they pay obvious dividends

How much are your IS organization's efforts worth to your company? Ronald J. Delp, the director of Steelcase Automation Services (SAS), can answer that question for Steelcase Inc.

SAS provides IT-based services to the independent furniture dealers who actually sell Steelcase office furniture. Whenever dealers use an SAS service to help make a sale, they receive a follow-up inquiry from SAS 90 days later. The dealers are asked whether the particular service they used helped them to win the contract and, if so, how important a role it played. For the first 10 months of 1989, SAS programs were found to be critically or very important in selling \$280 million worth of furniture, out of a total of \$1.6 billion in U.S. sales. —A.E. Alter

The SAS Payoff*

SERVICE	FINANCIAL IMPACT
Design specification (furniture symbol library & electronic catalog)	\$170 million
EDI	36 million
Workstation renderings	19 million
Workplace audit	17 million
Refurbishments	16 million
Survey analysis	14 million
Lighting visualization	8 million
TOTAL	\$280 million
*First 10 months of 1989	



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vey Analysis. It also "allows users to calculate the amount of time their people are unproductive, based on the interruptions and distractions they report," Delp said. If someone says they are distracted 17 percent of the time because of the traffic flow in their department, the user can measure any productivity increases when the traffic flow is changed.

"Our dealer network was set up back in the 1920s and '30s. It's served us well. The dealer is the person who is on the scene, understands local conditions, and has a stake in what's happening in the local market."

—Ronald J. Delp

Another Steelcase service helps designers find the best way to place lighting in their customers' offices. They mail a lighting design, which includes overhead lights and windows, to SAS. SAS's "Lighting Visualization" program analyzes the lighting design, then creates a drawing that shows where the light will fall and how much illumination it will provide.

According to Delp, this service had an \$8 million impact on Steelcase's business for the first 10 months of 1989. Survey Analysis and Workplace Audit made a difference of \$14 million and \$17 million, respectively. Two other services, however, collectively had a \$170 million impact on Steelcase's bottom line.

Delp calls these "design-specification" services. What they really do is make it simpler for Steelcase cus-

Channel Support

Sometimes it's not a question of whether to provide value-added technology services but, rather, where to draw the line



Once a company starts providing technology-based "solutions" for its distributors, tricky new questions can arise. That has been the experience of Ronald J. Delp, the director of Steelcase Automation Services (SAS), and other IS managers at Steelcase Inc., in Grand Rapids, Mich.

One set of issues they are considering is what technologies to offer their distribution channel. That's not just a question of what new services to create, but also a question of what to do with existing ones. How much functionality should SAS add to their dealer- and designer-support programs? Should the mainframe- and workstation-based systems be downsized to PCs? How much integration of these systems do dealers want, and when?

Another important issue, according to Delp, is "how far dealers want the system to go." This is a major concern with the new design system Steelcase is developing for its Context furniture line (see main

DELP: *How much dealer support?*

tomers to envision office layout. Using popular computer-aided design (CAD) packages (by Intergraph, Autocad and other vendors), dealers and designers prepare space plans or layouts for their customers. SAS provides a collection of scaled 2- and 3-D representations of Steelcase furniture that are loaded into the CAD software. These representations allow designers to include Steelcase furniture in their space plans and make it easier for dealers and customers to visualize what they need to order.

Steelcase's "electronic catalog" helps dealers and designers cope with the complexity of Steelcase's product line. "It is an electronic price-and-product manual, with software that allows you to completely and accurately specify our product," said Delp. "Let's say you are going to order a [particular] desk. The

electronic catalog will lead you through the process of specifying fabrics, colors, locks, drawers, pedestals, work surfaces and panel sizes so that, when done, you have an accurately and completely specified product."

The symbol library and the electronic catalog, in a way, broke the ground for other services. The symbol library was the first way dealers could envision how Steelcase products would look in an office. Shortly after it was created, Delp's organization came up with a service that provides drawings of how a workstation configuration (consisting of desk, credenza, shelves, chairs and locker) would actually look. This service, according to Delp, can produce in two weeks a "pseudo-photo" from a laser printer that not only fills out the lines of the schematic, but shows the colors and fabric finishes. "If you stand

story). The Context Design System will give customers the ability to select, configure and specify office furniture themselves. Delp acknowledged that this will change the way dealers and designers conduct their business, and that they may be uncomfortable with or even feel threatened by these changes. But Delp expects the system to free dealers up to provide other services and to work with more potential customers than they now can.

Fortunately for Delp, Steelcase has many direct and indirect ways to track what technologies its dealers, customers and designers either want or fear. "We have an SAS user group that is an invaluable source on what programs to enhance [or] develop," said Delp. Further input comes from the "25 customer groups a month which come into our Grand Rapids headquarters." Delp also taps the insights of SAS employees who provide technical support to the sales force and run the division's service programs and Steelcase personnel who work directly with the company's dealers.

—A.E. Alter

back three feet from those plots, it looks like a photograph of a mock-up."

Under consideration for the future are animated drawings that would allow potential clients to see what it would be like to walk around or sit down at a workstation.

The electronic catalog developed by Delp's organization began taking the company in another direction: providing systems that make it easier and more efficient for dealers to do business with Steelcase.

In September 1986, Steelcase acquired Hedberg Data Systems of East Windsor, Conn., a purveyor of VAX-based business-management and accounting systems for furniture dealers, and turned it into its main EDI vehicle. Dealers use the systems to exchange information with both Steelcase and their major customers, to interface with other popu-

lar PC-based planning programs for office-furniture dealers, and to gain access to Steelcase's electronic catalog.

But not all the systems SAS offers to help dealers manage their business run on Hedberg. Steelcase offers a PC-based sales-management software package called SNAP, which tracks leads and sales-call activity and creates profiles of major accounts. The company also provides a service that helps customers decide whether refurbishing their old furniture is actually cheaper than purchasing new furniture. This assessment program gained over \$16 million in sales for Steelcase in 1989. And the company offers a "Business Listing Service," which provides data on po-



STEELCASE'S Corporate Development Center (above) and its atrium (top)

PHOTOS COURTESY OF STEELCASE INC.

tential customers (number of employees, ratio of white-collar to blue-collar workers, and assorted other factors). This data is available to dealers through Steelcase's field-sales support organization.

In an attempt to gain the affection of another important constituency among Steelcase customers—the people responsible for managing their companies' buildings and facilities—this year Steelcase will inaugurate a system enabling facilities managers to keep close tabs on their furniture stock. The new system attaches bar codes to each piece of furniture. Using a "hand-held scanner that is really a portable PC," said Delp, facilities managers will be able to enter the location of a particular piece of furniture into a database.

But SAS has another development project underway that represents a more significant change of course for the company. Until now, Steelcase has not combined design, visualiza-

"The biggest way to differentiate ourselves today is by presenting this incredible array of options more easily to the customer."

—Robert Scott

tion and order-specification functions into an integrated system. With the help of Apple Computer Inc., who is supplying free technical support and hardware, and KPMG Peat Marwick, which is providing the software designers, Steelcase is now developing such a system. It represents a departure for Steelcase: It is the first time SAS is developing a system that supports only one of the company's five lines of furniture—its new Context

line—and, said Delp, the new Macintosh-based system will be so simple that customers can use it themselves.

For now, however, just one part of the Context system is available to dealers—a "pricing assistant," which lists the actual cost to the dealer of Context furniture. But should the software-development gods smile kindly on the project, users of the Context system will be able to design a layout by choosing from a library of Context furniture symbols, arranging the symbols as they like. An expert system in the package prevents users from placing together items of furniture that are incompatible. Once the user designs a layout, he or she will be able to view it from various angles in both a 2-D and 3-D outline, and list all the components and (if the user is a dealer) their price, as well as all the available details and surface materials.

Creating customer-support systems is like eating potato chips. No matter how many you have, you always seem to want more. That is the situation in which Delp and Scott find themselves. When they look ahead, they see sluggish demand among their traditional Fortune 1000 clientele (corporate downsizing means fewer employees who need furniture) and the possibility of foreign competition. In the future, Steelcase will need to pursue furniture markets where it has a smaller presence—such as the market for small, professional offices.

So Delp and Scott are looking ahead to determine what new services they should devise (see related story). They are considering developing specific electronic catalogs for individual dealers. They are also planning to speed up the acknowledgment of orders over the Hedberg EDI network, offering more furniture finish options, simplifying Steelcase's order numbers, and creating more flexible manufacturing operations.

"We want to be incrementally better than our competition in a thousand different ways," said Delp. That ambition should keep SAS busy for many, many years. ☐

TECHNICAL PROFILE

Steelcase Inc., of Grand Rapids, Mich., is a \$2 billion designer and manufacturer of office furniture. Information technology plays a major role in its day-to-day operations and in all phases of the business. Steelcase Automation Services (SAS) provides IT-based services to the independent furniture dealers who sell the company's products and to the architecture and design (A&D) firms who design potential clients' office space.

Some of these services are offered as PC or Macintosh software packages to the dealers and A&D firms. Others are performed at Steelcase headquarters, on mainframes (by internal IS) or on SAS's own engineering workstations.

Dealers and distributors pay low fees for SAS services. Many services and software programs are free; others are available at nominal costs. SAS charges a substantial fee only for the Hedberg EDI system (although, according to Delp, 75 percent of the actual cost is subsidized by Steelcase). Steelcase, said Delp, has tried to eliminate the financial obstacles for dealers interested

in using these systems—and has willingly sacrificed a potential revenue stream to this higher goal.

Large and Mid-Range Systems: Steelcase uses IBM 3090, 9370 and 4361, and DEC VAX systems to support operations and distribution in North America.

End-User Computing: The company has about 4,500 devices supported on its networks, including about 1,500 IBM PCs and Apple Macintoshes, approximately 80 Zenith laptops, and numerous printers and terminals.

Software: Includes MVS, VM, CICS, PROFS, Cadam, Catia, IMS, DB2, VMS, and VAX Mail.

Networking: Steelcase supports various third-party value-added networks, leased lines and dial-up lines. Network software includes Token Ring, SNA, Emulation protocol, DECNet and Ethernet. There are approximately 100 communications lines coming into the communications center.

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BY PAUL KONSTADT

... or Maynard or Cupertino. When your vendor proposes a strategic alliance, how do you decide whether to say, 'I do'?



hen an information technology salesman invites Leonard Cohn to make a "strategic alliance," the St. Louis-based Monsanto Co. vice president of information systems and telecommunications hears him as saying, "I'd like to have you so close to me that I have you as a captive audience." When Dan Geer, an external research program manager for Digital Equipment Corp. of Maynard, Mass. uses the same term to solicit customer participation in his efforts, he is offering his allies the chance "to operate in the environment of the future now," albeit with some added risk of disruption from unforeseen technical glitches.

Those differing perspectives define a debate being repeated throughout corporate America as a growing number of IT vendors and their customers edge toward more intimate and longer-lasting relationships. While academic theoreticians and consultants and even a few venturesome CIOs advocate such partnerships heartily, other information executives remain skeptical (even fearful) that the lofty rhetoric of mutual strategic benefit might only be concealing vendors' earthly commercial goals.

The very definition of the term strategic in this context is controversial. Virtually everyone would agree with the broad form sketched by Norman Weizer, senior consultant for Arthur D. Little Inc., the Cambridge, Mass., consulting firm. "I define a strategic relationship as one in which both partners get something that would be of very significant value for their businesses." Most information executives would probably also agree to the caveat added by Curt Beaumont, the director of technical user services at International Data Corp., of Framingham, Mass.: "It is real, but it's only real

where the user enforces it, . . . primarily by badgering and by requiring vendors to live up to their advertised responsibilities." Where the doubters differ from the advocates is in the nitty-gritty.

"The commercial world today calls many kinds of activities 'strategic,'" said Monsanto's Cohn, "and I'm often not sure what they mean."

"'Strategic' is such a misused term," agreed Harry Johnson, manager of field support systems for Kemper Corp. of Long Grove, Ill., a financial services holding company. "The definition shifts depending on the point the person is trying to make or the product the person is trying to sell."

Vincent Swoyer, vice president of corporate systems for the Sara Lee Corp. in Chicago, added, "We should be the ones to determine whether there is a need or advantage to getting into a relationship with a vendor that goes beyond the normal purchasing contract arrangement."

Cohn prefers to apply the term "strategic" only to activities related to the



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anyway.*

long-term plan for corporate direction, not to lesser undertakings such as joint product development. Anything less than a multiyear road map is viewed more as good basic business practice than strategy—the kind of elemental marketing effort that Monsanto itself uses to sell its chemicals and pharmaceutical compounds. “[We] attempt to find out the bottom line of what the customer is after and then jointly work toward filling that need,” Cohn said.

A number of activities are covered by the “strategic alliance” semantic umbrella: the use of customer sites for testing new technologies and applications before those items are offered for sale to the general market (also known as beta testing); the participation of a customer in a vendor’s product-planning process; the licensing for resale by the vendor of applications developed by a customer’s in-house staff; and even end users’ direct capital investment in the vendor. These endeavors are not new, but in recent years they have become significantly more common. At the Otis Elevator Co. in Farmington, Conn., for example, spending for the fruits of strategic relationships has grown dramatically, according to Don Lucas, Otis’s vice president of information systems. As much as 20 percent of Otis’s capital budget for information systems is spent on products growing out of Otis’s strategic vendor relationships, Lucas reported—up from 5 percent or less five years ago.

A major chunk of that strategic spending was done as part of the development of OTISLINE, the pioneering field service program that is an epitome of information technology. “Our strategic relationships are what make OTISLINE as good as it is today,” Lucas said. “Without them, the program would not have been as efficient, . . . and we would not have been able to enhance it.”

OTISLINE combines compact portable computing terminals backed up by a nation-spanning data radio network and automated dispatching system to tell field repair technicians exactly where repairs are needed, and get them to the scenes of breakdowns with unparalleled speed. It enables Otis to assure customers that

broken elevators can be fixed in short order—often hours faster than competing services. And all three key elements of that service grew out of strategic relationships—with IBM Corp. for the terminals, with Motorola Inc. for the radio system, and with Tecknicon Infoswitch for the automatic dispatching. “I like to think that we have an advantage because we really lead the way in our technology,” Lucas said.

OTISLINE’s birth wasn’t easy, Lucas acknowledged. “It was very painful,” with one key element, the automatic dispatching system, running six months behind schedule and requiring the labor of four people working full time. Ultimately, the problem required an expensive fix—a minicomputer to run the connections between the central dispatching database and the various paging systems in use nationwide.

Those difficulties did little to dim Lucas’s enthusiasm for the OTISLINE effort, however, and he gave a one-word answer when asked if he would do it again: “Absolutely!”

Another pioneering information technology project that grew out of a strategic user-vendor relationship is the organizationwide image storage and retrieval system at the United Services Automobile Association (USAA), an insurance and financial-services firm based in San Antonio, Texas. USAA struck a deal with IBM to develop the imaging technology jointly because, said USAA Vice President of Administration George McCall, “we just couldn’t create it ourselves; it was just too big.” Their combined efforts produced a trend-setting innovation for USAA—a 1,450-terminal system that gives any USAA service representative instant access to any letter or form pertaining to any USAA customer—and it led to ImagePlus, an important product line for IBM.

The relationship between IBM and USAA continues so that refinements of the basic system can continue to be developed. “Now they’ve got people working on different functions—like how to do color photographs and how to do voice mail. Those are requirements we’ve got that we wouldn’t be able to solve ourselves

because it's too much of an investment." All in all, McCall estimated, the IBM partnership allowed USAA to put its imaging system into service three years sooner than if the company had waited until the complete product was available off the shelf. In addition, the product contains an added richness that grew out of USAA's participation in the design phase.

One of the oldest forms of vendor-user alliance involves user-written software that a vendor adapts and resells. IBM's CICS operating software for transaction processing was born in a user's shop and adopted by IBM some 20 years ago. Virtually every vendor's catalog today contains applications written by its customers. It is a relatively risk-free way to earn some extra profit from work the user had to do anyway, as Kemper's Johnson learned from Computer Corp. of America based in Cambridge, Mass. "We're using CCA's Model 204 relational database manager. It doesn't have any performance monitor with it, so our folks developed one. CCA picked it up [and] they're selling it to a lot of customers."

Kemper was willing to share that particular item, Johnson continued, "because it was just the sort of standard system software we wished somebody else had developed, and it doesn't give us any particular edge in selling or servicing our insurance products." In other words, it has no strategic value to Kemper. "We'd be less willing to have this kind of involvement if it had."

The price of reaching for technological leadership can be significant—even greater than simply the costs associated with unforeseen complications like those faced by Otis. The Massachusetts Institute of Technology (MIT) learned this in the course of playing host to Project Athena, the strategic alliance among the Cambridge, Mass., university, DEC and IBM. Begun in 1983, Athena was designed with the dual aims of giving MIT the resources to explore the frontiers of IT in higher education while at the same time allowing two of the biggest archrivals of the computer world to develop ways to make their disparate systems work together

in a prototypical distributed computing network.

On the plus side, MIT received some \$80 million worth of state-of-the-art computer hardware: processors, storage devices and display terminals that are used to enhance the existing curriculum and to allow the teaching of new subjects, or old subjects in novel ways. But on the minus side, said DEC's Geer, who is in charge of Digital's portion of the effort, "there is a price to being a guinea pig. An awful lot of early work had to be trashed."

Among other tradeoffs, Athena researchers decided not to guarantee that existing applications would continue to work each time the network was updated—a characteristic called backward compatibility. That meant that with each network improvement, a lot of software, in Geer's term, "broke." MIT's administration, he continued, "made the choice, over a lot of howls, that it was more important to finish the job within the grant period than it was to worry about backward compatibility."

"It's like any other risk environment," he added. "You have to accept a certain amount of turmoil."

Strategic partnerships are very attractive for vendors, and they account for a growing portion of many system builders' R & D efforts. Vendors say that the deals significantly cut the costs of bringing new technologies to market, and they enable vendors to target their products at clearly defined user needs rather than trying to guess blindly what potential customers will buy.

"It really has to do with the strategic value of the system," said Dan Miley, product manager for customer service systems at Wang Laboratories Inc. of Lowell, Mass. "You can build things that perform generally understood functions, like word processing or accounts payable, in isolation; but as soon as you contemplate systems that are specific to a business area, then you have to be very tightly involved with the customer."

Geer agreed: "There is no substitute for trying to use [a new application] while it's still in its formative stages. . . . Software that is developed in the absence of daily use



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—Dan Geer

[doesn't go] anywhere."

Good partnerships help vendors avoid semantic traps, said Peter Pritchard, vice president of sales operations for Bedford, Mass.-based Computervision, a unit of Prime Computer Inc. His company is working on software that will give personal computer users easy access to the data stored in Computervision's most advanced engineering workstations. They know their own product intimately, he said, "but you have to have a real world partner somewhere who is going to help define 'effective, friendly interface.'"

A good application built for an important customer will usually have other takers, as Wang's Miley learned. Miley led the Wang team that built the imaging system for

Ford Motor Co.'s European customer service operation. With three years of joint development effort, Ford and Wang have gotten production systems into service in Britain, Ireland, Belgium and Spain, with France and Germany due to be included in the coming months. A "generalized" stock system should be ready by next winter, Miley said, developed in response to interest heard from other large consumer goods manufacturers. "Company after company told us that customer service was something they wanted to better, but they couldn't find any good solutions."

Strategic partnerships also allow vendors to see how the needs of their users are evolving. That in turn allows them to plan their own product and technology strategies more efficiently. Computervision, for example, has had an alliance with Ford's U.S. manufacturing operations for years, long before it became a division of Prime. That relationship allowed Ford to develop customized software that coordinates Ford's manufacturing and design efforts with those of its component suppliers. "We are, for all practical purposes, the exclusive remarketer of Ford software aimed primarily at the Ford supplier community," said Pritchard, who spends his time shuttling between Computervision's offices in Bedford and Ford's Detroit-area facilities. "We ended up with a broader product offering [while] Ford got specific tools perhaps earlier than if they had just waited for the vendor community to get around to those requirements."

The future is expected to bring many more strategic alliances, because the economic and technical forces driving the movement to date are expected to intensify, not abate. "Au courant technology is getting far more complex, and the systems themselves are far more complex," said Arthur D. Little's Weizer. At the same time, downsizing means that companies have "fewer resources, . . . so people are looking very hard for new ways to get an advantage. [They are] willing to take bigger risks" in order to minimize costs and stretch scarce assets. ☐

Deepening the Relationship

When you find the right vendor, consider buying it

Like Victor Kiam, who liked his electric razor so much he bought the company, there are information technology users who have found some product or service so attractive they forged a financial bond with the vendor.

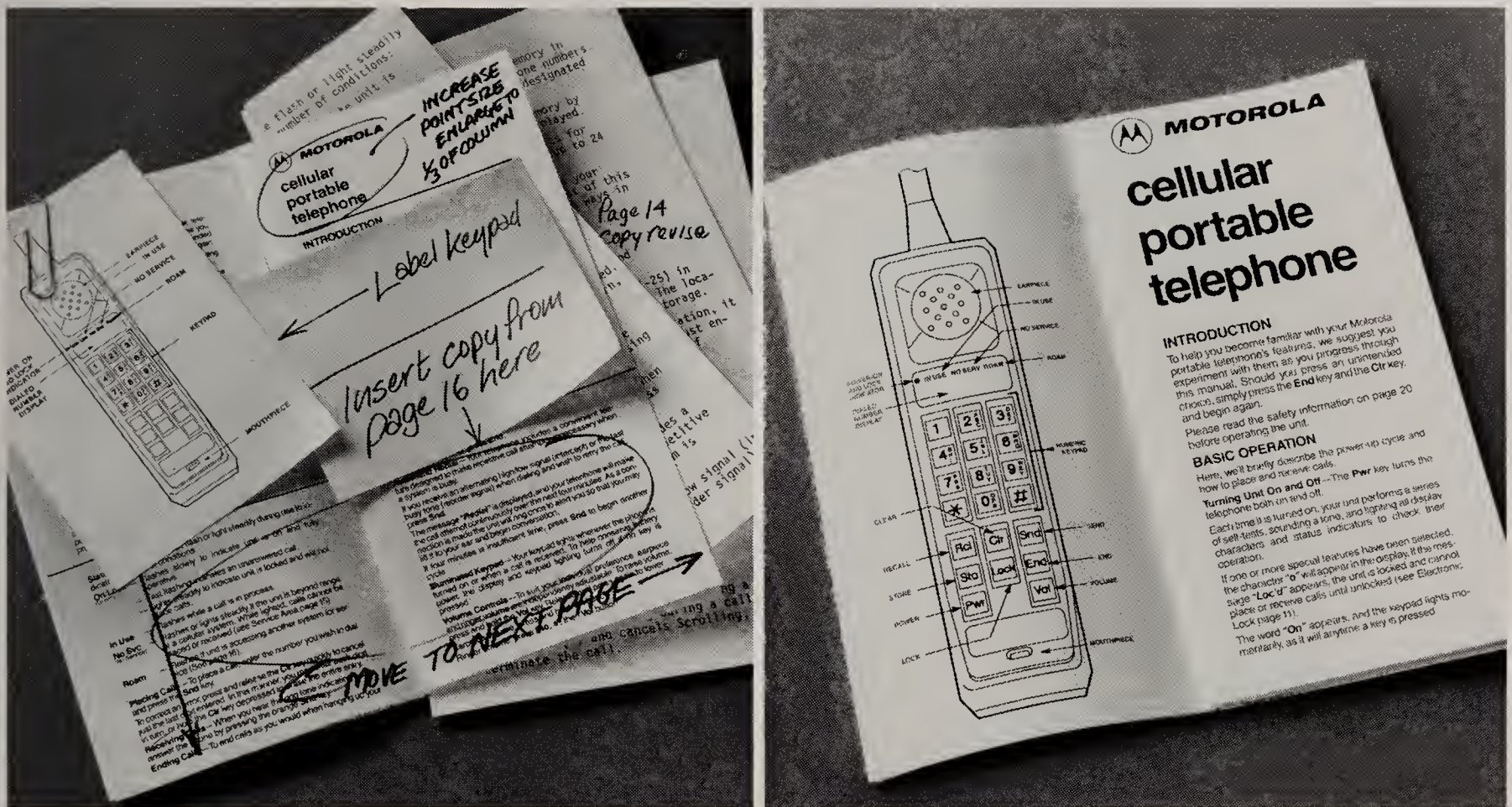
"It's the ultimate form of strategic relationship; you buy them out," said Arthur D. Little senior consultant Norman Weizer.

Builders of large systems have given capital infusions to potential strategic allies for years. For example, IBM helped the giant semiconductor maker Intel Corp. get off the ground. But the practice of user companies buying into vendors gained greater prominence only when General Motors bought Electronic Data Systems as a way to advance GM's own information technology goals. "That may be the best example" of a user-vendor financial deal, said Curt Beaumont, an analyst at International Data Corp. in Framingham, Mass. "But I don't believe there's a pattern" to those types of deals yet, he added.

The Procter & Gamble Co. has made a number of strategic investments in small IT firms that make products that P&G is interested in. Five years ago, the Cincinnati consumer goods conglomerate threw its weight behind Metaphor Systems Inc., of Mountain View, Calif., taking 6 percent of the firm. (At the same time, the A.C. Nielsen Co. acquired 6 percent and IBM bought an 8.3 percent interest.) As a result of the deal, Metaphor was able to expand its market potential by reengineering its data-management and -analysis product—moving it off the proprietary, dedicated platform it had been designed for and onto the latest generations of PS/2- and OS/2-based personal computers. P&G and Nielsen, meanwhile, got sophisticated software they could use on their existing multipurpose networks.

"In Metaphor we saw software uniquely tailored to consumer products marketing," explained Robert Herbold, senior vice president of P&G. "That's why we took the position in Metaphor; to nurture it." —P. Konstadt

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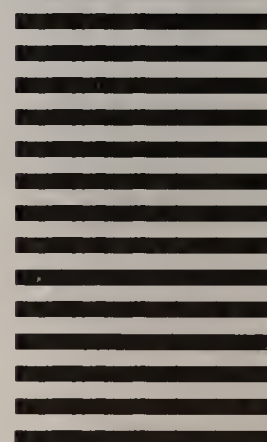
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Be a Great Communicator

Know your stuff, get to the point quickly, don't try to say too much, include a few sound bites and don't be a stuffed shirt. Any questions?

BY DR. MURRAY R. YEAGER

CIOs should take a leaf from Aristotle's book, *de Rhetorica*, when it comes to succeeding at one of the most important elements of their job: communicating. Aristotle's basic analysis of the communications process defined rhetoric as "gathering all the available means of persuasion"—and that's what we're constantly doing.

The components of a successful CIO include good judgment and common sense, giving clients respect and loyalty, the ability and desire to work hard, continually building on his or her education, being creative—and being a good communicator.

The communication component is the one that prevents many CIOs, whether their background is business, management or technology, from being good or even great.

What is most important in business communication situations, as in all facets of communication, is to be yourself; and that can take a long time to master. But if you can get your point across clearly and quickly in conversation, you stand a better chance of communicating effectively in any public appearance.

As Roger Ailes, a communications expert who counseled presidents Reagan and Bush, noted, "For middle management and up, the primary criteria for advancement are communication and motivation skills."

Ailes also points out that "good communication starts with good conversation. If you converse well, then you should be able to transfer that ability to a lectern or TV or any other format."

Senior executives who manage information resource planning and architecture should strive for the appellation *USA Today* gave President Bush: the "comfortable communicator."

CIOs—whether they work for a financial, manufacturing or retail firm—need to improve their communication skills. This is especially true as their companies become more dependent on information processing and increasingly use IT for competitive advantage.

The challenge facing CIOs today is summed up in the injunction set forth by the writer George Eliot: "To manage men, one ought to have a sharp mind in a velvet sheath."

After 25 years of training professionals and executives for presentation and interview situations, I believe the first thing any CIO must acknowledge is that they're being photographed and recorded—whether actually or figuratively.

What has been referred to as the Aristotelian triangle consisting of three equally significant points—the



ILLUSTRATION BY MARTY BLAKE

speech, the speaker and the audience—is still valid. In today's language, what Aristotle is saying is: Know your objective, your listener(s) and your approach before you communicate or make any kind of a pitch.

His basics are still the place to begin when approaching any communication, whether it is personal or professional, one-on-one or to groups of various sizes and situations.

If we turn to Aristotle for advice, his beginning point would be called "invention," which he defined as the intellectual stock of human ideas. We can translate that to ask: What are you trying to say? What are your goals and purposes in this communication?

"Preparation is essential because whenever you speak to other people," said Ailes, "they must have absolute confidence that you know what you're talking about. That doesn't mean you have to be the world's leading authority on the subject. But your listeners should feel that you know more about the subject than they do and that you've done some preparation for addressing them—either formally or informally."

There are only four things you won't be forgiven for in communication: not being prepared, comfortable, committed, and interesting.

Ailes points out that "good communications is an art comprising listening, reacting, enthusiasm, empathy, and a mutual understanding of thought."

Prescott Behn, a founder of the Enterprise Consulting Group of Carlisle, Mass., employed Ailes' speech-making strategy in a one-hour presentation on successful marketing/sales techniques before an audience of management consultants.

Behn also heeded Aristotle's counsel. He had done his homework and without a text brought out several main points ("central core ideas") so that his audience could remember what he said. He had a focus.

He talked about image: How do you look? ("Dress for your audience as the Romans there do.") How do you sound? ("Be affable.") Do you appear confident? ("Your knees don't

have to go to Jell-O when you communicate.")

Behn also listened to the input from his audience, observing the Chinese proverb, "Tell me and I'll forget; show me and I may remember; involve me and I'll understand."

The next step in Aristotle's recipe for successful communication is how

*Senior executives who
manage information
resource planning and
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strive for the
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to approach the presentation. He referred to this as "dispositio" or organization. He suggested three basic appeals used to persuade: logical, emotional and ethical.

The first impression you make is probably based more on emotional and ethical reactions than on objective or rational ones.

Some experts maintain that we make a quick assessment of other people within seven seconds of first meeting them. The non-verbal communications—your entrance into the room, your handshake, your body language, your manner and bearing—will register consciously or subconsciously on the "audience," whether it be one person or a group.

This is even before you speak more than a few words. One critical aspect is your eye contact. Eyes are often the first place you look when you meet someone for the first time.

Ralph Waldo Emerson said, "Eyes can threaten like a loaded pistol, insult like a hiss or kick, or by beams of kindness make the heart dance with joy." Dorothy Sarnoff, a speech

expert, has said that "eyes communicate volumes."

Successful communication also requires that the speaker remember that we live in a fast-paced society.

William Safire has noted that "people prefer short takes. . . . The attention span of most Americans is about twenty seconds, the length of a television clip. . . . We're becoming a short-take society." You've got to consider how much the audience can absorb. What do you want them to take out of the session? If you give them too much, they won't really get anything.

Milo O. Frank, business communications consultant and author of *How to Get Your Point Across in 30 Seconds or Less*, says that today's time constraints are "not only on yourself, but also on those you're trying to convince." According to Frank, "The hour of years ago is the 30 seconds of today. To survive and move ahead in business or any other relationship, you must be able to get your point across swiftly and succinctly in 30 seconds or less."

He adds that "even when a person has time to listen to you, his mind can accept only so much information in one steady flow."

An example of this occurred earlier this year when I was working with a client from an HMO. The medical director was a well-educated and knowledgeable professional preparing for a presentation to the board of directors. He had written a 30-minute talk. My advice was to cut it down to 10 minutes to avoid information overload. He went before the board with the new presentation, making his points early-on. After five minutes, one of the board members said, "Doctor, we've got the idea; we'll go along with what you propose." Short and simple is best in communicating. If you give too much, the audience will miss the message.

Aristotle's third point of rhetorical analysis has to do with the use of language and style appropriate to the three elements—you, your subject and your listener.

Your language should be less abstract and more personal, with examples from your own experience if appropriate. Let the examples come



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Don't be a pedagogue. CIOs will communicate better if they use a nickel, rather than a quarter word. Don't use too many statistics, even in a CIO's computer-oriented business world. Use them only when they can be persuasive; people forget them.

Concerning language: Talk with, not to, your audience. You may not have a speech-writer like the acclaimed Peggy Noonan, who wrote for presidents Reagan and Bush, but you ought to think about sound-bites like "read my lips," "a kinder, gentler nation," and "a fresh breeze is blowing." Creating a memorable phrase in advance is not new to successful communications. In 1776 Jefferson wrote in The Declaration of Independence, "life, liberty, and the pursuit of happiness." Earlier this year, Lee Iacocca said that Japanese automakers were wearing a "Teflon kimono" that kept American buyers from recognizing when domestic vehicles were comparable to imports or were even better values when they sold for less.

As for style, one memorable example comes to mind that occurred during a training session with a group of leading Massachusetts businessmen. One of the participants was one of the top bankers in the nation at that time. Despite—or perhaps because of—his status, he came across as a patrician, stuffy, Ivy League elitist, chock-full of banking jargon.

I startled him with the comment that he projected a stuffy persona on the video. I told the banker that he'd be a more effective communicator if he adopted an everyday approach. In later video sessions, he was indeed a better communicator, in part because he kept his presentation short and simple.

Style, or image, is critical to being a successful communicator, and that's why video playback can have a strong impact as part of the preparation process. One of my clients for a major utility was smart and articulate, but he was creating a negative impression. He parted his hair down the middle, giving him the look of someone who graduated from col-

There are only four things you won't be forgiven for in communication: not being prepared, comfortable, committed, and interesting.

lege in '09. I got him to part it on the side and he looked 20 years younger—and he also liked the change.

In a study of the abilities managers consider to be most critical for their managerial success, respondents rated listening as the number-one area of competency to be developed. Individuals spend 80 percent of their time communicating in one way or another. Of that time, about 45 percent is spent listening. However, research indicates that people on average listen at an effective rate of only about 25 percent.

The higher a CIO advances in management, the more critical listening ability and skill become. According to executive recruiters, seven out of 10 people lose their jobs because of personality skills, not because of lack of expertise.

You have to observe as well as absorb—again, with your eyes and ears. Hear questions in terms of not only what is being asked, but how, with what emphasis, in what manner, and with what attitude. Your intelligent questions may be more important to successful communication than your intelligent answers.

It requires careful listening to answer what is really being asked, not what you think or anticipate is being asked. This makes mandatory your concentration and, again, eye contact. You must listen from the other person's point of view.

An ever-increasing aspect of communication is the use of audio/visuals. The best advice for successful communication is the less, the better.

Advertising guru David Ogilvy

once said that the demons of presentations are visual aids. They have the greatest potential for going wrong.

As Dorothy Sarnoff has pointed out, "Depending on visual aids to get your message across sends a signal right off the bat to the audience: either your written material or your personal chemistry or both aren't up to the job. Most people say they use visuals to underline a point. You don't need visuals for that. Emphasize your points with your voice and forget the slides. But sometimes when presenting statistical material, you will need visual aids."

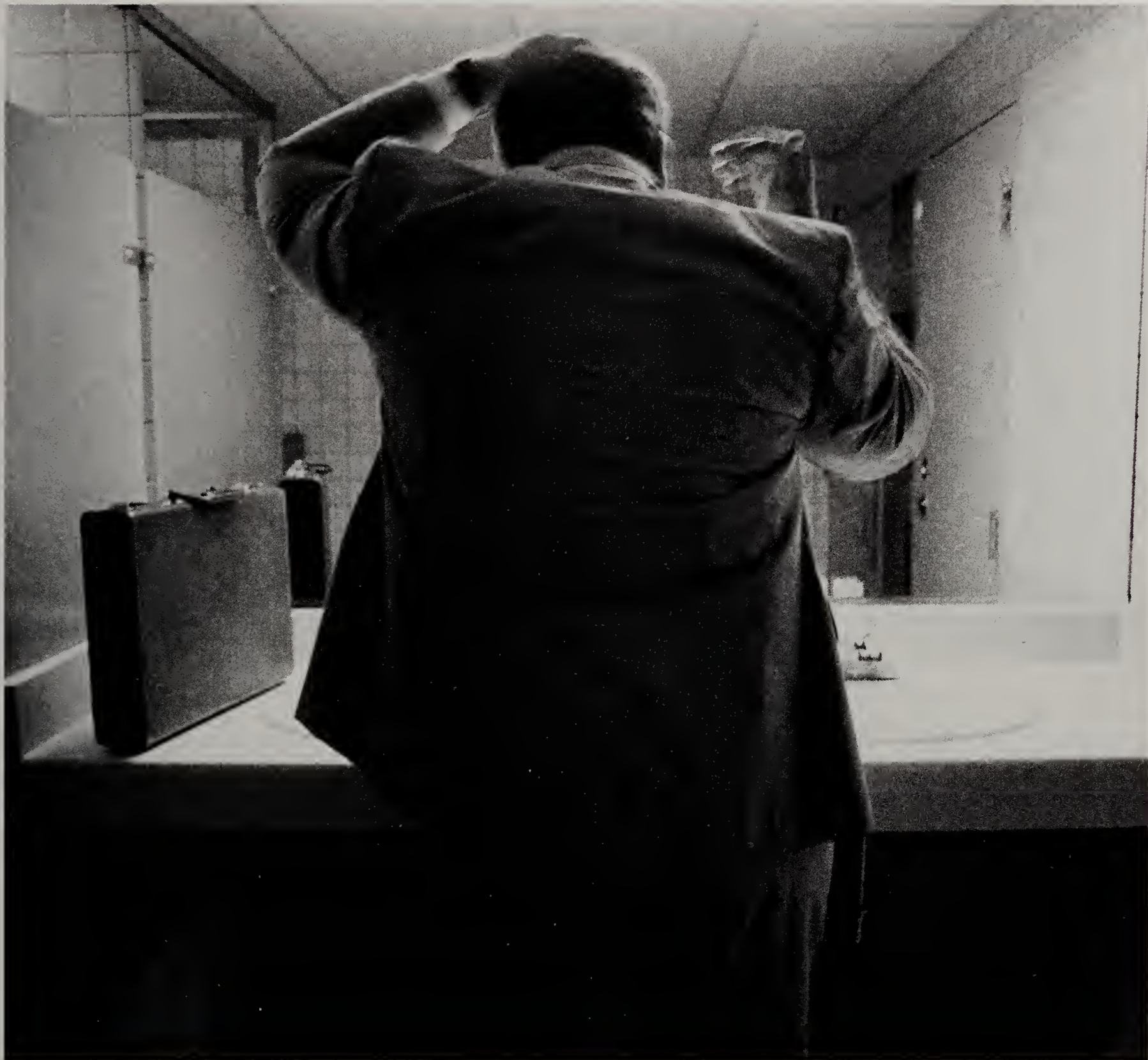
When I work with clients, I ask them to ask themselves: Do you really need visuals? Most times the answer is no.

For example, I was working with a doctor who was preparing for a major presentation to his peers. We started with 24 slides. After our consultation, he went before the audience with only one slide. The presentation was a success because he didn't clutter it with distractions from the message. The one slide really spoke for itself.

Delivery is Aristotle's fourth essential consideration. CIOs don't need to commit the communication faux pas of a big-time performer. According to a *Los Angeles Times* report: "Michael Jackson is the \$20 million corporate spokesman who won't speak. 'Protect me. . . . Don't let them ask me questions,' Jackson whispered to a top executive from L.A. Gear at a press conference. The 100 reporters jeered when he left before taking any questions."

On the other hand, President Kennedy was the public-relations person's dream, with excellent delivery, articulate speech, and fast uptake and return in press sessions. He was always "on" in public, so there was a consistency of presentational style. Bright and alert, he was the quintessential public-relations communicator: always aware of the audience and his impact. ☐

Dr. Murray R. Yeager teaches communications at the University of Southern Maine and is president of Image Communications of Belmont, Mass.



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The emerging star quality of Unix is slowly turning the heads of corporate CIOs. If you're not at least looking, you might someday be asked to explain why not

BY MICKEY WILLIAMSON

Among the dozens of operating systems in use today, only Unix can run on computers of any size, and on virtually any processor. IBM Corp.'s MVS won't do it. Digital Equipment Corp.'s VMS will run on a broad range of platforms, but only if they wear the DEC label. MS-DOS, the next-most-portable operating system in existence, runs on millions of personal computers from a legion of vendors, but only on personal computers. OS/2, expected by many (but not all) analysts to replace MS-DOS on the desktop, will have the same restriction, as far as anyone in a position to talk about the operating system's future will say.

Unix has other sterling qualities, too. Its ability to support multiple users performing multiple tasks is one. Built-in communication facilities is another. But it is the operating system's comparative indifference to the computing environment in which it is being asked to work that is inspiring information technology managers to take a second look at what used to be the exclusive domain of the technically oriented user.

Multi-platform capability confers a significant benefit on Unix users: the ability to pick and choose among hardware vendors. This turns computers into commodities and is a major contributing factor in the disparity of prices between Unix workstations and those based on proprietary operating systems.

Why wouldn't a technology manager sit up and take notice when the price/performance profile of a workstation based on a proprietary operating system is an order of magnitude higher than that of a Unix machine? Measured in million instructions per second (MIPS), Unix workstations can be had for \$1,000 per MIPS. Workstations running proprietary operating systems cost at least 10 times as much.

A survey of 129 commercial computer sites done at the end of 1989 by International Data Corp., the Framingham, Mass., market-research organization, leaves no doubt that IS management is beginning to take Unix very seriously. Only 30 percent of respondents disagreed or had no opinion on the statement, "Unix is my operating system of choice for addressing my business problems in the 1990s."

The Aberdeen Group Inc., market researchers in Boston, predicts that the current \$13 billion market for Unix hardware and software will grow to \$30 billion in 1994. Something must be going on here, and it behooves every IS executive to find out what it is.

Vendor independence and the cost of MIPS are powerful inducements to consider Unix, but they are not the only ones. When an organization outgrows the proprietary platform for which its applications were built, the only option is to rewrite the applications for another environment, at a cost figured in multiple work months.





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- | | | |
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Moving from one Unix platform to another may be as simple as buying another compiler and recompiling source code. At worst, the tweaking required to move from one flavor of Unix to another is done in a few weeks, according to many who have done it.

Extending the life of commercial applications is one facet that commands attention. Another is the fact that the programmer's reach is extended across multiple platforms. Learning the differences between various incarnations of Unix is a trivial task compared with learning to program for MVS once VMS has been mastered, for example.

The Aberdeen Group Inc., market researchers in Boston, predicts that the current \$13 billion market for Unix hardware and software will grow to \$30 billion in 1994. Something must be going on here, and it behooves every IS executive to find out what it is.

An obvious question arises: Why, if it's that simple and that beneficial, doesn't everyone agree that Unix is the wave of the future? The answers point up Unix's shortcomings.

First is the fact that until recently, the interface between Unix and end users was absolutely surly. MS-DOS without Windows was bad enough, but at least the user had a mnemonic hook to help remember that typing "dir" would display the contents of a

hard disk directory. In Unix the command is "ls." What about trying to remember that "mv" means "rename," "cat" is for displaying the contents of a file on-screen, and "df" checks for unused hard disk space? That's hardly the kind of productivity-enhancing user interface that wins friends and influences people to love the IS department.

Further, Unix was designed at AT&T (which holds the rights to the name and the basic kernel of code) to facilitate computer-to-computer communications. Written in the C language (also developed at AT&T), the plain vanilla version of Unix—the part that remains the same from ma-

chine to machine—is limited in functionality. For example, it was not made for real-time applications or transaction processing, a fact reflected in its performance characteristics.

The fact that Unix is written in a well-known, high-level language has led to the proliferation of variants, developed by vendors who bought source code rights so that they could augment its capabilities. The result is a better Unix but diminished portability, which some managers have seen as a deterrent to adoption.

Off-the-shelf Unix applications have been slow to appear. When AT&T began to market Unix to the general public after the 1984 divesti-

Open Hostilities

With the two main standards bodies still at odds, users can abandon hope for now of a unified Unix universe

For a while it looked as though the hostility between the Open Software Foundation (OSF—the group founded to counter the threat perceived when Sun Microsystems and AT&T joined forces to develop System V Release 4) and Unix International (UI—the organization that AT&T activated to counter the establishment of OSF) might end in a merger of the two entities.

Both sides agreed on two points in talks that broke down last April: System V Release 4 would be the basis of a jointly developed product, and dismissals would be required to trim the staff of 800 to 900 people currently working for OSF, UI and AT&T's Unix Software Operation (USO) division. (USO is a division of AT&T while UI is an organization of AT&T and some of its customers.)

The question of where the staff cuts would be made, however, remained on the table when the negotiators walked away. So, too, did the matter of the value of USO, which AT&T would have sold to the surviving organization. AT&T valued USO at about \$400 million. Too steep a price, said OSF, for a division that had yet to turn a profit.

Further, OSF insisted on equal ownership of the surviving company from its inception. AT&T wanted to retain a larger share at the outset, expressing a willingness to decrease ownership to equality over a few years, but arguing that the alternative would lead to massive layoffs at USO and the consequent loss of considerable talent.

For the foreseeable future, at least, user organizations can abandon hope of a single set of portability standards, with one development organization to support and enhance them. But two not-very-different flavors of Unix is still a great deal better than the 30-or-so very different proprietary operating systems that integrators have come to know and hate.

—M. Williamson

ture of the Bell operating companies freed it to do so, the target was the technical, scientific, and engineering market, where there was little perceived need for spreadsheets and word processors.

Perhaps most significant from the point of view of many IS managers is the potential loss of control implied in the adoption of an operating system that turns workstations into commodity purchases. Purchasing would be easily decentralized, much like the PC phenomenon of the mid-1980s, with IS being responsible for supporting equipment about whose acquisition they were never consulted.

But Unix now has characteristics that should broaden its commercial appeal. The winnowing process that characterizes a commodity marketplace has left two major strains to dominate it: AT&T's System V and the version developed at the University of California at Berkeley, the latest release of which is Berkeley 4.3. Xenix, developed by Microsoft Corp. and spun off to The Santa Cruz Operation Inc. as SCO/Xenix, is the dominant PC version. (Last year Microsoft, recognizing the potential importance of Unix on PC workstations, acquired a 20 percent stake in SCO, a move that simultaneously improved SCO's fiscal health and virtually guaranteed that there would be no major competitors in the PC-based Unix arena.)

Also late in 1989, Sun Microsystems Inc. and Unix Software Operation (USO), the AT&T division devoted solely to its Unix product, introduced System V Release 4, which incorporates enhancements found in Berkeley Software Distribution (BSD) Unix 4.3, Sun Microsystems' Sun OS, and Xenix, reducing still further the work required to move between platforms. This year's enhancements add multi-language capabilities, enabling the operating system and applications to communicate with users in several spoken languages, including French, German and Japanese. Japan's Sigma software-development consortium has adopted System V.4 as its standard operating system.

Meanwhile, the Open Software Foundation, formed in 1988 by Unix vendors who felt threatened by the alliance between Sun and AT&T that was to spawn System V.4, continues to develop another Unix strain, named OSF/1. We can expect to see its release in 1991.

The user-hostile Unix interface is

The user-hostile Unix interface is also undergoing a transformation with the introduction of graphical user interfaces as sexy and capable as anything we've seen on the PC to date.

also undergoing a transformation with the introduction of graphical user interfaces as sexy and capable as anything we've seen on the PC to date. AT&T's Open Look and OSF/Motif, which is based on the MIT-developed X Window user-interface standard, both became generally available in the summer of 1989. Both eliminate the need for business users to master Unix's cryptic command structure, but writing applications for them turns out to be hardly a day at the beach. That has created a market opportunity for companies such as TeleSoft, of San Diego, Calif., whose product line includes TeleUSE, a user-interface management system for OSF/Motif.

Off-the-shelf applications are no longer scarce. Microsoft Word and WordPerfect, the two leading PC word-processing packages, are now available in Unix versions.

To make the migration of applications from one generation of hard-

ware to the next nearly effortless, companies such as Liant Software Corp., of Framingham, Mass., provide host-independent application-development tools and languages.

In the software development arena, Hewlett-Packard Co. of Palo Alto, Calif., offers computer aided software engineering (CASE) vendors the opportunity to sign up for the CASEdge program, integrating tools across the development life cycle in a Unix environment. IBM has announced plans to blend CASE tools running under AIX, its version of Unix.

Workstation prices continue to fall. This summer, IBM released a low-end RS/6000 workstation with a \$500-per-MIPS price tag. Sun Microsystems countered with a 12.5 MIPS SPARCstation priced at \$5,000—beating IBM's per-MIPS price by \$100. Bull HN Information Systems Inc., based in Billerica, Mass., announced a line of workstations that run in the Bull Open Software (BOS) environment, based on Unix System V with Berkeley 4.3 extensions. DEC weighed in with workstations that run only Ultrix, the DEC flavor of Unix, forsaking the proprietary VMS operating system.

Stratus Computer Inc. in Marlborough, Mass., delivered Unix-based fault-tolerant online transaction processing with the introduction of the XA2000 Model 30 machine.

One by one, except for the question of absolute purchasing control, objections to Unix as a commercial operating system are crumbling. To solve the control-and-support problem, far-sighted IS executives are trading their purchasing power for the authority to promulgate "OK-to-buy" lists from which user organizations can make their selections.

The move toward Unix may not be right for every company, but CIOs who have opted against exploring its advisability will someday be called upon to explain their reasons. The answer had better be good. ☐

Mickey Williamson heads the Querty Group and edits the newsletter CASE Strategies.

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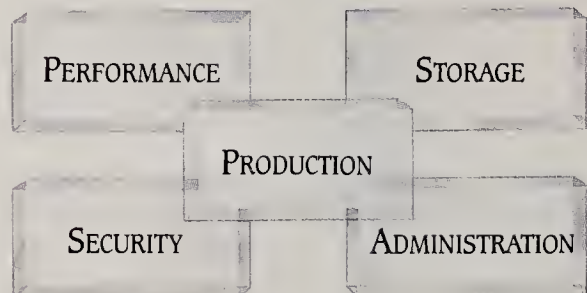
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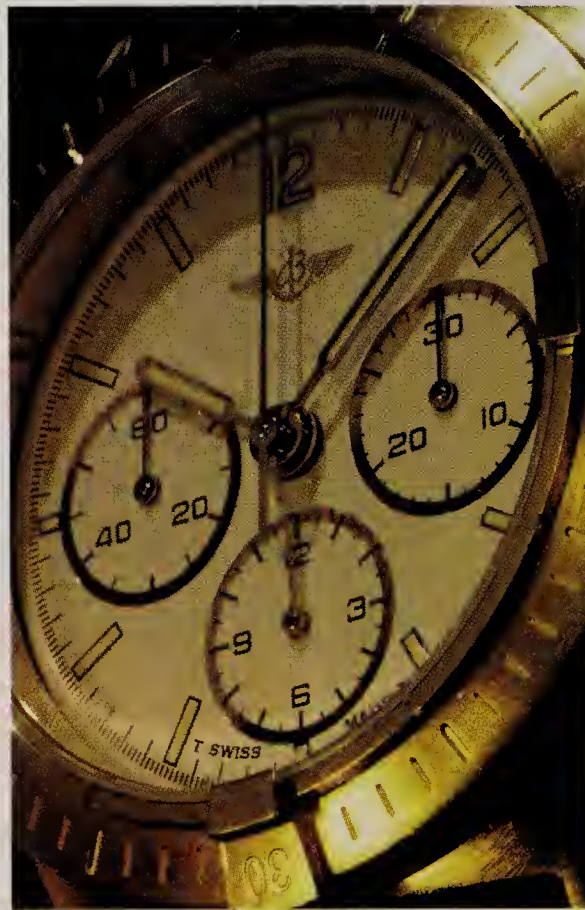
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CONFERENCE CALL

QUESTION: *Can technology be used to support creativity?*

Some say that's not its proper role. But others claim that technology frees the individual from mundane chores to concentrate on more worthy tasks.

Paul Berger

President of Paul Berger Consulting Inc. and PBC Management Video Programs in Lawrenceville, N.J.

“Yes—but a lot depends on the individual.

In some cases people prefer to have routine drudgery kind of work. They're comfortable with it. They wait for a problem and react to it.

Other people look for ways either to free themselves up to do other kinds of things or to leapfrog up above the regular kinds of systems. I know people who have really used information systems to great advantage to do better analysis and make better decisions—all the things we used to tell people they should be doing.

“There's nothing intrinsic in using technology that will make someone use the time that's freed up creatively. In fact, very often it has nothing to do with freeing up time but with how the person works.

“You have to believe that you can encourage creativity in order to generate new ideas or improve processes.

“What technology can allow you to do is to collapse the amount of time you spend doing a lot of routine things. And if you really rethink the processes and redefine the job that's being done, you can really make major changes in productivity. If you look at any company that's had successful use of technology, they've made changes in the work process.”

Susan M. Mersereau

Vice president and general manager of Weyerhaeuser Information Systems, a division of the Weyerhaeuser Co. in Tacoma, Wash.

“Whenever you help people see things differently—give them a new set of lenses—that triggers a creative process in the person. I don't think computers are creative; I think people are. By giving people a new way of doing something, computers stimulate new ways of thinking about it.

“I start out with a basic assumption that you have linear ways of thinking, and you have more intuitive or holistic ways of thinking. I've done a lot of work with Sumi brush painting, a Japanese form of art wherein, in order to clearly understand what I'm seeing, I have to switch from looking at a tree as a tree and focus instead on the shapes and colors and dimensions. So I've shifted from one way of using my brain to another. I believe that programming is much more sequential, logical and linear than it is intuitive, holistic or creative. Computers are sometimes stuck in the former mode because you have to name things in order for the computer to recognize them.

“I don't think corporate America is squelching creativity. I just don't think that our educational system has focused on creativity. I think the norm in the last 100 years has been far more in terms of the scientific area than the creative area.

“The source of creativity is the individual. If people are not trained or taught how to utilize their creative capacity, they're not going to think about how to use a computer in that capacity.”

Gareth Morgan

Professor of management in the administrative studies department of York University in Toronto; author of Images of Organization and Riding the Waves of Change

“With the changing business environment, flexibility and adaptiveness and new ideas for products and processes are absolutely critical for the speed at which we're able to respond to events. Technology is critical to this transformation: You can use it merely to streamline the bureaucracy, or you can use it to break free into new forms. But don't expect any dramatic breakthroughs if you're rewarding compliance and punishing risk-taking. Changes in the way people think have to be accompanied by changes in the structure and managerial style.

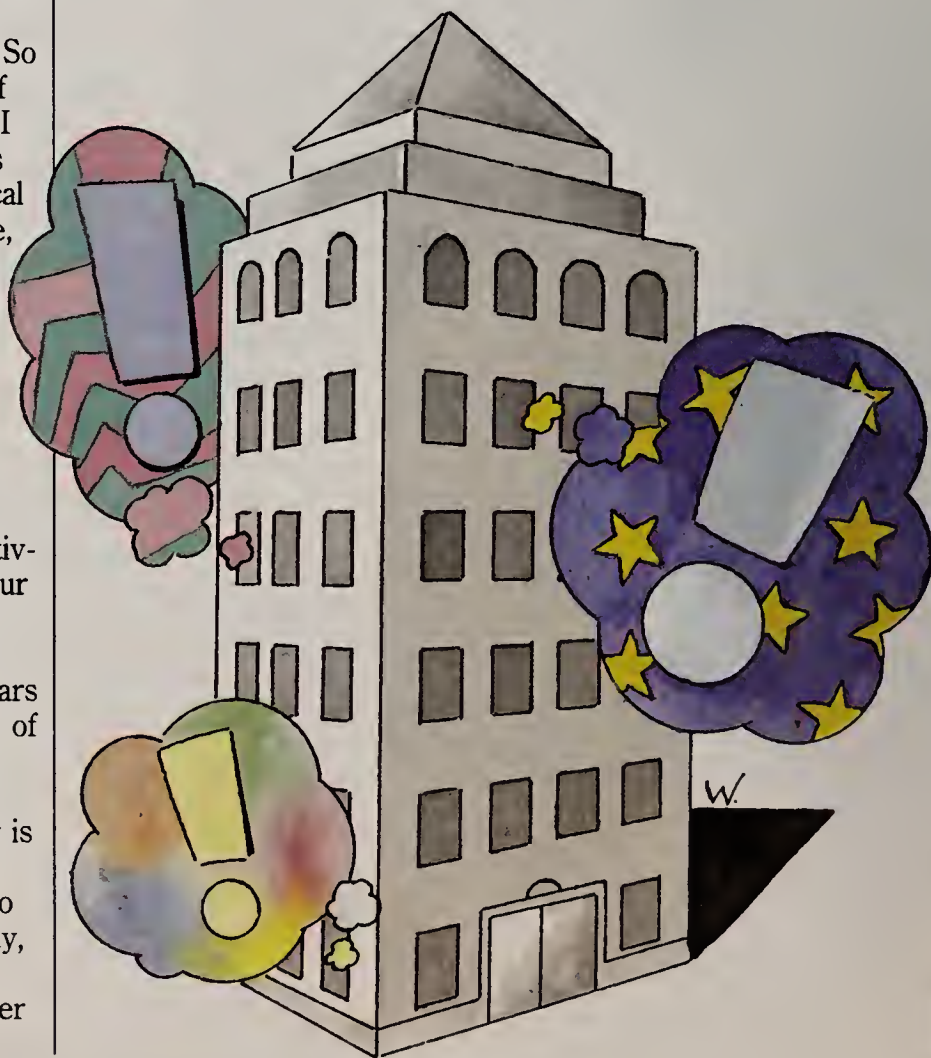
“People are more innovative and able than organizations have traditionally presumed. The human potential is there. The real management challenge is in unlocking and shaping that potential.

ing that potential.

“The people at the top are the bottleneck in many organizations. If people at the top are empowered to see the possibilities, then they can restructure the controls to pass the authority and decision-making down. Vision is the ability to see the possibilities and being willing to take the risk.

“We have to think more in terms of managing by shaping the assumptions that underlie people's activities, so there is a shared understanding of the goals of the organization. I think we overplay the idea of technology tools. If we want to do something, it's the North American way that we've got to get a tool to do it. In point of fact, what we've got to do is create the context for people to use their intelligence.”

Readers are invited to suggest Conference Call questions. Contact Staff Writer Meghan O'Leary at 508 935-4733 or by fax at 508 872-0618.



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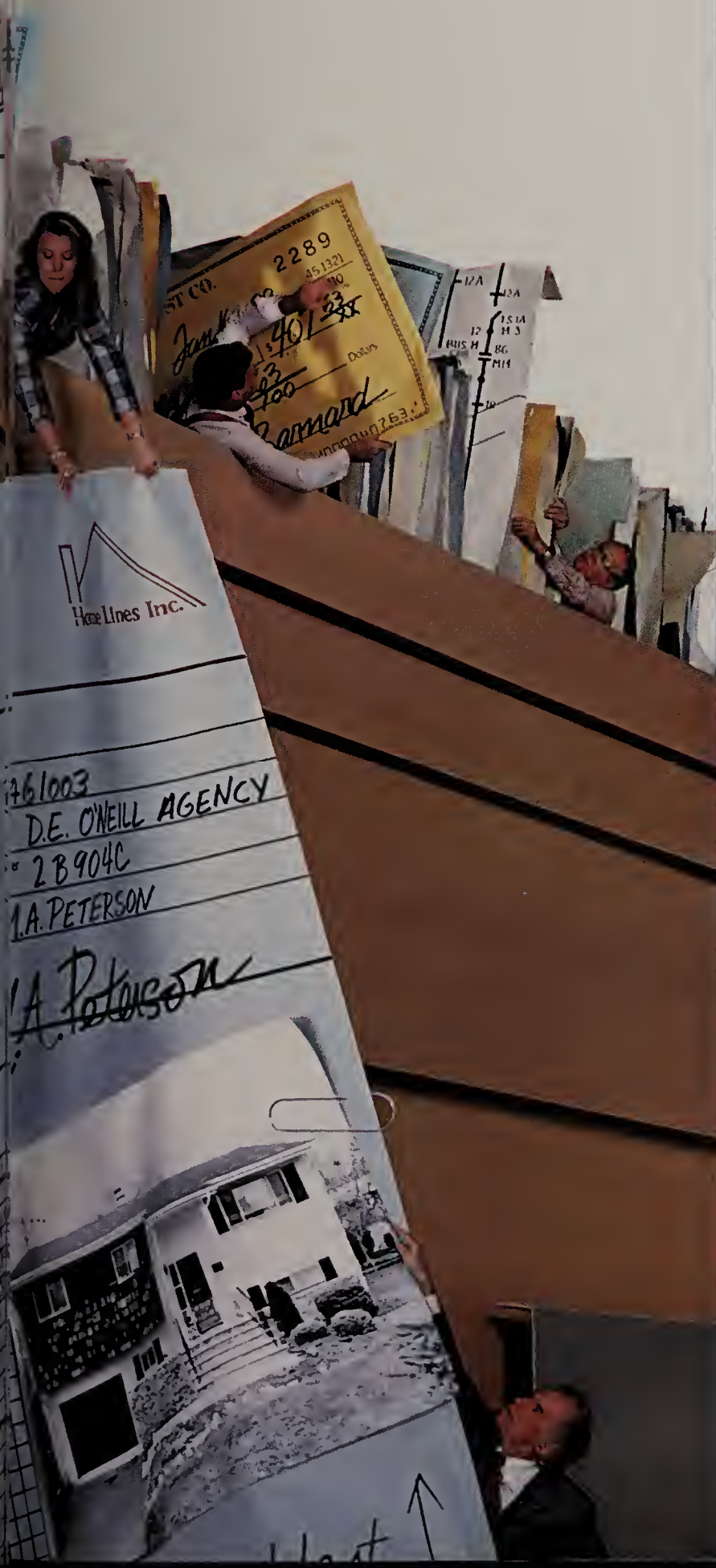
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